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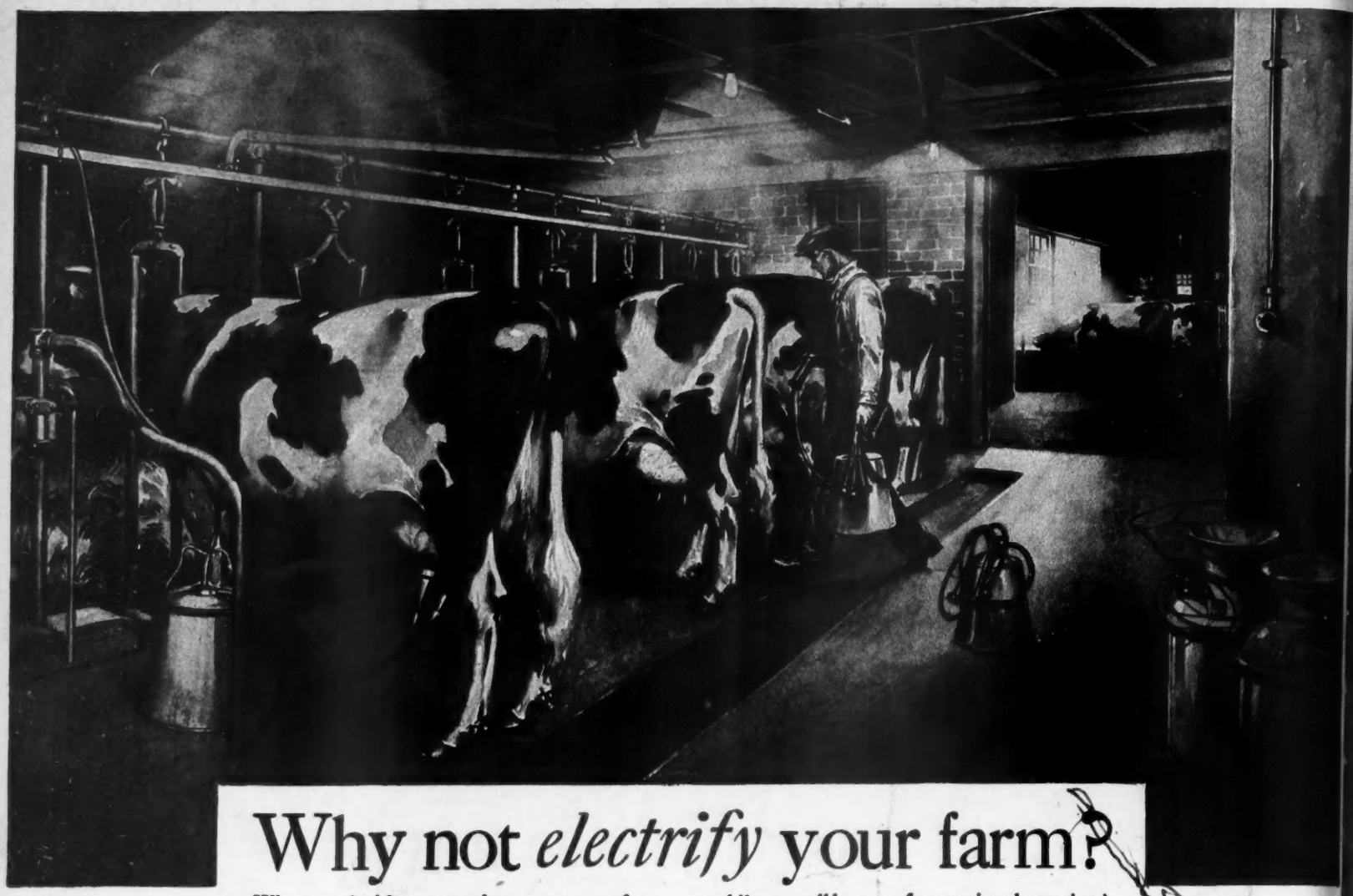

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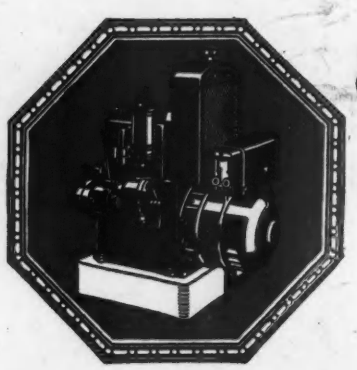

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The Grape Industry of Western New York

By L. H. Woodward

THE hills of western New York approach to within five miles of Lake Erie in the vicinity of Dunkirk and Westfield. From the foot of these hills there is a gentle plain sloping toward the lake. From this narrow sloping plain both east and west the plain widens; it is on the narrower part of this Lake Erie coast plain the great American Grape industry has developed.

Most of the area is in Chautauqua County, but there are a great many grapes grown both to the east and to the west of Chautauqua. In the one county alone there are over thirty-five thousand acres of grapes, and in an average year this acreage will produce better than five-thousand carloads. A yield of two tons per acre is considered good, but the normal yield per acre is very much less than this, often not much over one-ton.

Best Varieties

About ninety-five percent of the acreage is set to the Concord. The Concord is to the grape Industry of Chautauqua County what the Baldwin apple is to New England. From the time of its first introduction this variety has been popular because of its ability to thrive on almost any type of soil, because of its productiveness, because of its excellent quality for table and for wine and finally because it stands up well in shipments. Other varieties that are well known in the belt are Niagara, Worden and Deleware. All of these are grapes of quality and have a place as table grapes.

More recently the Agricultural Experiment Stations of the country have developed some new varieties that are receiving some well merited attention. Chief among these new varieties are the Portland, Ripley, Ontario and the Dunkirk. Some of these bid fair to become popular early varieties for this is one of the characteristics that the stations have been working on, in order to satisfy the home gardener.

At the present time most of the grapes are shipped in climax baskets holding about twelve quarts and weighing twenty pounds. Many other methods of shipment have been tried but experience has proved that at the present time there is nothing better than this Climax basket.

The large grape juice factories in the belt have not been running for three years but when they do handle grapes they furnish their own containers. The trays in which these factory grapes are handled are large flat wooden trays which may be piled high in the trucks and on the wagons that haul them to market.

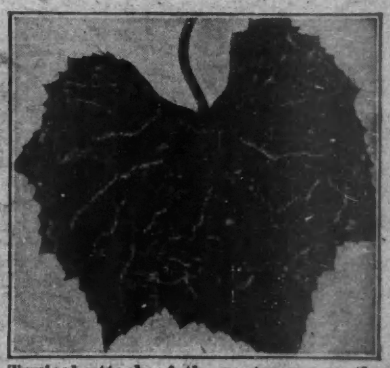
Experimental Grape Vineyard, Fredonia, New York

Difficulties of Inspection

Various methods of packing and inspection have been tried. Under normal conditions grapes will not admit a great deal of handling, and as a result of this, central packing houses have not become popular. In order to avoid this handling most of the grapes are at present packed in the baskets as fast as they are picked from the vines. The pickers are equipped with a pair of sharp pointed grape shears and with these he not only cuts the stems from the vines but also trims out any injured grapes and makes the bunch as compact as possible before it is layed in place in the basket. All this is done in the field and for the most part the grapes are not handled again until they reach the consumer.

With the above method of picking and packing in mind it will be very easy to understand the difficulties of

General view of Vineyard section showing excellent care



Typical attack of the rootworm on the leaf

inspection. In the central packing house the manager has little difficulty keeping an eye on the quality of the fruit that goes into the basket, but in the field when the pickers are scattered he must rely on the carefulness or the carelessness of the transient labor which he must hire.

The baskets of grapes are hauled to the packing shed at night where they are allowed to wilt before the covers are applied. After being covered and labeled these grapes are ready for loading on the refrigerator cars.

Marketing the Crop

Marketing has many difficulties. Not only is it difficult to inspect the fruit, but also the total crop of five-thousand cars or more must be shipped within a very short period of time. The fruit is very perishable, and a car not properly iced or the grapes exposed to the hot sun for a few hours, may mean the loss of the entire car.

Another very great difficulty that the growers have experienced is making the baskets stand up well in the cars. A few years ago the United States Department of Agriculture investigated this problem and brought to light some very interesting facts. Best results were obtained by those shippers who loaded the baskets end to end extending from one end of the car to the other. The only place where the baskets should be placed crosswise is at the end of every alternate double row. This basket placed crosswise is merely to fill in the space which would otherwise be left open by this straight end to end packing. The baskets should be loaded as snugly as possible and racks should be used to fill any surplus space.

If the last row of baskets does not completely fill the space left at the side of the car then the loading of this last row diagonally is recommended. This is important because any surplus space is almost sure to cause the load to shift and shifting is just as sure to result in many broken baskets. If the shipper could keep these few rules in mind, never to place a basket crosswise in the car except at the ends and to leave no vacant space, the loss in shipping would be greatly reduced.

Government Inspection service should also be given careful consid-

(*Continued on page 19*)

Rambles of a Horticulturist

By C. I. Lewis

Few States can equal and perhaps none excel Michigan in pear production

MICHIGAN produces one-half the gooseberries of the United States and half of Michigan's crop is produced in Oceana and Newaygo Counties. The growers seem to be preferring Downing to Houghton as the Downing is large, uniform in its ripening and keeps green after harvesting much better than does the Houghton. Shelby is one of the horticultural centers of Oceana County. The section is rather rough, the hills being steep and rugged and the soil a combination of sand, silt and clay which does not seem to wash badly, with fine air drainage and good exposure. The region is a natural horticultural district.

We visited the orchard of O. R. Gale who has a rejuvenated peach orchard that it will pay Michigan growers to drive miles to see. This was an old, fifteen-year-old orchard 20 ft. high. He cut back the trees very vigorously a year ago and has developed a fine, new top with low heads, strong bearing wood and already a good sprinkling of fruit. The varieties are the Engle, Mammoth and Elberta. He has been growing cover crops in the orchard and is also applying some acid phosphate and sulphate of ammonia. There is a very interesting old Delicious apple tree on the place which the present owners know has had three large, consecutive crops. This year there are easily 25 bushels of apples on the tree. Plums do very well in this section and Burbank and Damson are both growing nicely.

The W. L. Demmon ranch is well-known in that district, consisting of some 112 acres of fruit. The older orchard had far too many varieties, being largely a collection, but many of the trees are being worked over to the better varieties and there are some very handsome young blocks of Northern Spy, Steels Red and McIntosh. There are some good blocks of plums and small fruits, some of the currant bushes this year yielding as high as 25 quarts and from one-third of an acre of currants $400.00 worth were sold this past year, which was enough to buy the hay for the farm. Mr. Demmon says it is a mighty easy way to raise your hay as you do not use much land and it is not much work. One of the attractions on this ranch is a very fine house for women. It will accommodate some 20 girls, has a good kitchen, dining room and sleeping quarters. By having such a building he is enabled to get good, permanent help for the length of the picking season.

Mr. Demmon also keeps very careful records. He has his orchard platted and keeps a record of each plat and has inauguratd a careful bookkeeping system so that he knows just what each kind of fruit is returning on the farm.

Young apple orchard in sod, owned by C. D. Kistler, Ludington, Mich.

The Hart District

Near Hart, we had the pleasure of visiting the orchard of George Hawley, President of the State Horticultural Society. Mr. Hawley conducts a small nursery in connection with his orchard. He is very enthusiastic over his experiments with currants. He finds the Wilder and Prince Albert among the best. He applies about one-half pound of sulphate of ammonia per bush, which is equal to about 600 pounds per acre, costing $18.00, and he says he can get his fruit picked at 10c a crate less on the fertilized than on the unfertilized and that this alone will pay for the fertilizer, to say nothing about the heavy increase in yield. The fertilized bushes were green and vigorous and making a fine growth and in every way superior to the unfertilized. The same thing can be said of the gooseberries—good results being secured from the use of nitrogen. The currant bushes even showed the results of the fertilizer two years after the nitrogen had been applied. Mr. Hawley has a fine Bartlett pear block. The soil is a clay loam and he has been applying about two pounds of sulphate of ammonia per tree. He gets a better tree growth, stronger foliage and a heavier yield as a result of the fertilizer, but believes he gets more blight. He is also confident that wherever he uses nitrogen his cover crops grow much stronger and it would pay, for that one thing alone, to apply the fertilizer. He estimates this year that his fertilized pears will give him from one-third to 50 per cent more fruit than the unfertilized. On the plum blocks, it perhaps will not be saying too much to say that they are the finest blocks of plums in the state of Michigan. He has also been applying nitrogen in the form of sulphate of ammonia, but the results are not as striking, probably due to the fact that his orchard was in a remarkably fine condition when

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Red cherries and grapes, a good Michigan combination

A heavy load of apples in the Kistler Orchard

Handling Apples in Cold and Common Storage

By J. R. Magness

IN A previous article, apple storage as it is related to the growing and harvesting of the fruit was discussed. The influence of time of picking, care in handling, etc., upon the keeping of the fruit in storage was treated. The fruit was carried to the storage room door—it is now proposed to consider the effect of various conditions in the storage rooms upon the holding of the fruit. Among the conditions in the storage rooms that may exert an influence upon the holding of the fruit are temperature, humidity, and ventilation. These will be discussed individually.

Effect of Temperature in Storage

Temperature is by far the most important element in successfully holding apples in storage. All experimental work and all commercial experience in apple storage has shown that if the temperature of the storage room can be held down to from 30° to 32° the fruit will hold in excellent condition through a long season. The softening and ripening of apples are continuous processes which are going on even before the fruit is removed from the tree. Following picking the ripening occurs even more rapidly than while on the tree unless the fruit is held at low temperatures. The changes taking place inside the fruit are numerous. The starch which is very plentiful in apples when first picked changes into sugar. There is a decrease in the amount of acid in the apples and there is a gradual change in the structure of the cell walls in the apple flesh, which results in a softening of the fruit. The fruit during all this time, and until the end of its life, takes up oxygen from the air and gives off carbon dioxide, just as does all other living tissue.

The rate at which all these changes occur is closely associated with the temperature at which the fruit is held. The ripening of the fruit cannot be entirely stopped at any temperature above the freezing point of the apples, which is below 28° F., but when the temperature is reduced to from 30° 32° F. the rate of ripening is so slow that 8 to 10 days are required to soften the fruit as much as it will soften in one day at 60° F.

Rules of Storage

From the foregoing discussion it is apparent that the following rules may be laid down for successful apple storage.

Remove the fruit to storage as quickly as possible after it is picked. Fruit held around the packing shed for a week to two weeks will be as ripe when it goes into storage as it would have been after two months in cold storage at 30° to 32°.

The fruit should be cooled as quickly as possible. The ripening processes of the fruit are slowed down only when the temperature of the fruit itself is reduced. Many cold storage men have thought that rapid cooling is injurious to the fruit, but careful tests have shown that the more quickly the fruit is cooled the longer it will hold in storage.

Maintain a temperature of 30° to 32° F. This gives the minimum rate of ripening with no danger of freezing the fruit.

Cellar and Above Ground Common Storage

The above discussion applies primarily to cold storages, where it is possible to accurately control temperatures during all seasons of the year.

The principles, however, are equally applicable to all forms of apple storage.

It is not possible to maintain as low temperatures in cellars and common storage houses during the fall as is desirable for apple storage and it is this failure to secure low temperatures during this period that is responsible for the riper and softer condition of such fruit during the winter. The manager of such a house or cellar should take advantage of every opportunity to cool his storage

(Continued on page 16)

Growing Hardy Northern Fruits

By W. H. Alderman

FRUIT growing in the upper Mississippi Valley has to deal with one basic and important problem, namely, that of hardiness to winter conditions. Under ordinary circumstances the success or failure of a man who attempts to grow fruit in northern Iowa, North and South Dakota, Minnesota and western Wisconsin depends upon his ability to select suitable varieties and to so handle them that they are given favorable conditions under which to develop and to withstand the naturally severe weather conditions of that region.

Three Types of Injury

There are three general types of injury encountered by the growers. One of the most common types is that generally spoken of as sunscald. This is brought about by the rapid changes of temperature occasioned by severe freezing, followed by sudden thawing, usually on the southwest side of the tree where the full force of the afternoon sun raises the temperature of the dark colored bark many degrees. The second type of winter injury is of a different character and results in the actual killing back of the tips of the branches and sometimes of the entire plant. In mild cases this is associated generally with late and succulent growth of terminals, which because of their immature condition are unable to resist the extreme cold and as a result the plants show much dead wood at the tips. Where the variety is more tender or the conditions more severe, this injury may extend clear to the snow line or in extreme cases may kill the plant, root and branch. Closely associated with this type of injury is the common crotch injury, sometimes spoken of as "Crotch Canker." Since the main crotches of the tree are among the last places of the plant to mature and thoroughly harden their tissue, they are naturally tender to adverse winter conditions.

Topworking the Wealthy

Even a variety as hardy as the Wealthy is frequently affected with crotch freezing, so much so that many growers are now topworking their Wealthy on such sturdy stock as Hibernal or Virginia Crab. The third type of injury is that which affects only the fruit buds. This is more commonly found on the plum and cherry than it is on the apple. It sometimes happens that the entire flower cluster within the bud will be killed, while at other times only individual flowers within the cluster will succumb. The conditions which bring this about are generally those which sometimes occur during the winter when rapid changes of temperature occur in a brief time. It sometimes happens that the thermometer will rise or fall 40 or 50 degrees within a twelve or twenty-four hour period. These quick changes frequently cause bud killing, especially if they occur during the latter part of the winter after the buds have become partially aroused from their period of dormacy and are indicating some development within. An injury closely associated with this bud killing is frequently encountered in the raspberry where the tissue at the base of a bud that will develop into a lateral shoot is injured. When the cane is sliced longitudinally at the bud a characteristic browning will be found. If this is severe, it is followed by either a complete killing of the bud or else a weakened union which will cause the lateral to break down after it has made a short growth. In the strawberry a similar injury sometimes occurs in the crown at the base of the flower cluster.

Select Hardy Varieties

A most effective method of preventing winter injury is in the selection of hardy varieties, but even these are sometimes injured under unfavorable cultural conditions. Injury can sometimes be warded off by the use of proper precautions. It is much easier to prevent winter injury on heavy soils than on light sandy soils. This is particularly true of the types of injury which result in the killing of the plants or wood tissues. The reason for this is found in the fact that the sandy soils dry out much more completely and frequently enter the winter deficient in moisture. Under these conditions the soil will freeze deeper and soil temperature will be lower than they would under conditions where sufficient moisture is present. The result is that the entire plant becomes dried out and the killing, which is largely a matter of drying of tissue, is consequently more severe. It is obvious that any method of cultivation which will conserve the moisture content of the soil, particularly in the drier portion of the upper Mississippi Valley, will be effective in lessening winter injury.

Preventing Sun-Scald

There are other methods which may be used to supplement the one just suggested. A common treatment to prevent sunscald is to lean a board against the southwest side of a tree to afford shade and protection during the winter months. Low heading of trees should also be practiced to aid in the shading of the trunk. Some have reported satisfactory results following the whitewashing of the trunk and the main limbs. This treatment is based on the well known fact that a white surface will absorb less heat than a dark one and consequently a whitewashed tree trunk will not warm up as much nor as quickly as will one not so treated.

Producing Winter Hardy Fruit At the University of Minnesota Fruit Breeding Farm. A Hard Winter Has Eliminated the Tender Seedlings

Covering With Soil

A grape and berry grower may protect his plantations by laying down the canes in the fall and covering with soil. Until the advent of the hardy varieties of raspberries, it was the common practice in Minnesota to cover all red rasberry plants with soil from two to three inches in depth. Various devices have been employed to accomplish this, ranging all the way from a spading fork and shovel to a tractor drawn plow which bends over the canes and plows a large furrow of soil over the canes from either side. In the spring the canes are uncovered and partially straightened very easily by the use of a pitchfork. The objection to this practice is that many of the raspberry canes are broken during the process. To facilitate covering the tender varieties of grapes the plants are pruned by the spur method with a long low arm attached to a low wire. This can readily be dropped to the ground in the fall and earth thrown over it. From four to six inches of earth is usually employed in covering the grape. For the more severe sections of the region all black cap raspberries, blackberries, the tenderer red raspberries, the purple caned raspberry, and all grapes other than the hardy Beta and similar varieties, must be covered.

Best Cultural Methods

The best orchard cultural practices for other regions are also best for this region, namely, clean tillage during the early growing part of the season to secure vigorous growth and to conserve moisture followed by a good cover crop to check growth and bring about an early maturity of wood. By such practices the trees are put in favorable condition to withstand winter injury.

In producing trees for the northern plains, it is necessary to grow them on hardy root stocks. The plum should be propagated only upon Prunus Americana or Prunus Nigra roots, or if a dwarfed tree is desired upon roots of the sandcherry. It is not safe to grow the apple upon imported French crab stock, but rather it should be grown upon seedlings produced from hardy crabs or standard varieties of apples.

The Siberian crab produces a very hardy root, but frequently produces a somewhat dwarfed tree. If the grower is buying nursery trees of which the root stock is unknown, he would do well to buy trees which have been propagated only by rootgrafting and should plant these rather deeply so that the root of unknown hardiness may be buried as deeply in the soil as possible and so that scion roots may be put out from above the graft to carry the tree in case of subsequent injury to the root stock.

Breeding New Varieties

The ultimate solution of the hardiness problem lies in breeding hardy varieties. All of the cultural methods indicated above are of little or no avail under extreme conditions such as those which accompany the occasional so called test winters, which seem to come more or less periodically. In Minnesota the growing of red raspberries was a laborious and somewhat costly enterprise when it involved the covering of the canes during the winter, but the production of the Latham raspberry (Minn. No. 4) by the University of Minnesota Fruit Breeding Farm brought raspberry culture entirely above the ground and is bringing about a reorganization of the business. Commercial plum growing, except to a very limited extent, was out of the question when only the juicy, soft fleshed Americana varieties were available, but the hybridization of the native plum with the Japanese plum has created a new race which is firm in flesh, large in size, of good quality, suitable for shipping and entirely satisfactory as commercial market plums. The Minnesota Fruit Breeding Farm has introduced nine varieties of this type which, together with the Waneta from the South Dakota Experiment Station, are apparently going to replace, for both commercial and home use, the former varieties of Americana plums.

Sandcherry Highbrids

Mention should be made of the sandcherry hybrids from the South Dakota Experiment Station, which are so well adapted to the more arid conditions of the plains. These trees, with their dwarf habit, profuse bearing and medium sized good quality fruit, have given to the prairie farmer a very satisfactory fruit for either preserving or eating out of hand. A somewhat similar variety, the Zumbra, produced by the Minnesota Fruit Breeding Station and containing cherry blood, is of considerable value as a substitute for the sweet and sour cherries which cannot be grown in the major portion of the upper Mississiopi Valley.

Varieties Recommended

The University of Minnesota Fruit Breeding Farm has been in operation for fifteen years and during that time has introduced 23 new varieties of fruit suitable for cultivation in the northern United States. These varieties, a list of which follows, can now be purchased from all the leading nurseries in the state of Minnesota.

Plums: Underwood (Minn. No. 91), Tonka (Minn. No. 21), Red Wing (Minn. No. 12), Mound (Minn. No. 50), Anoka (Minn. No. 118), Monitor (Minn. No. 70), Winona (Minn. No. 30), Elliott (Minn. No. 8), Goldenrod (Minn. No. 120), Zumbra (a cherry-plum hybrid).

Apples: Folwell (Minn. No. 237), Minnehaha (Minn. No. 300), Wedge (Minn. No. 207), and Haralson (Minn. No. 90).

Red Raspberries: Latham (Minn. No. 4).

Gooseberries: Como (Minn. No. 43).

Everbearing Strawberries: Duluth (Minn. No. 1017), Deephaven (Minn. No. 41).

June-bearing Strawberries: Minnehaha (Minn. No. 935), Nokomis (Minn. No. 489), Easypicker (Minn. No. 775), Chaska (Minn. No. 801), Minnesota (Minn. No. 3).

The new varieties produced at the University of Minnesota Fruit Breeding Farm are first distributed for trial to various trial stations about the state and to such members of the State Horticultural Society as are interested in trying new varieties. When their worth has become established as a result of these trials propagating wood is distributed to such nurseries as are interested in handling the varieties. In view of the great demand for propagating material, it has been necessary to give Minnesota nurserymen precedence in filling orders, but as a rule nurseries outside of the state can also be supplied to a limited extent. No charge is made for this propagating wood and no restrictions are placed upon its propagation and sale. The Fruit Breeding Farm is maintained as a public service institution and its sole aim is to produce varieties of fruit that are suitable for growing in Minnesota and the neighboring states.

Delicious Apples Place In American Pomology

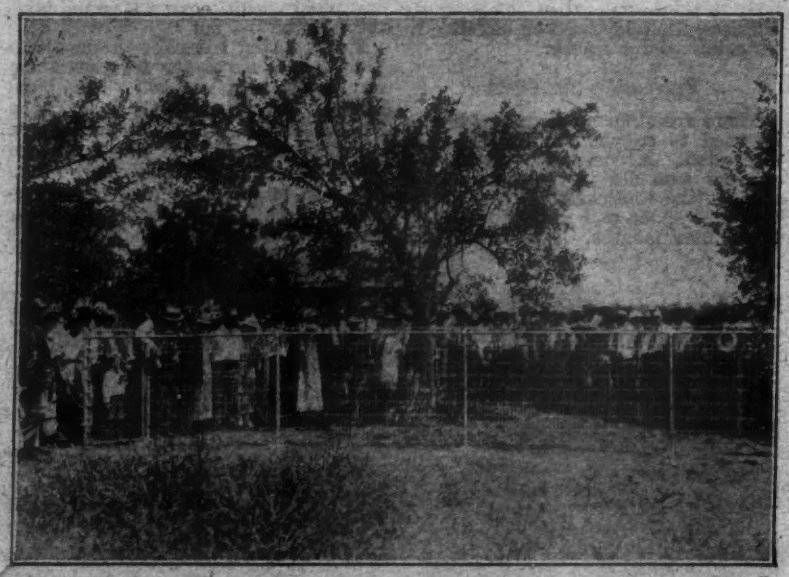
By C. I. Lewis

A MONUMENT was dedicated to the Delicious apple at Winterset, Iowa, on August 15, 1922. A group of horticulturists from all over the middle west, as well as a number from Canada, left Des Moines on the morning of the 15th and drove to the Thomas Enright orchard at Bevington. Here apples and cider were served to the many visitors. The horticulturists enjoyed visiting the Enright orchard which is a successful one, having a heavy crop of fruit this year, and has been producing heavy crops annually. Many of the Jonathan trees in that orchard will run thirty bushels and better to the tree. From the Enright orchard the group went to the Jesse Hiatt orchard at Peru where they had a chance to visit the old Delicious apple tree. The tree has been saved by the skillful work of Davey tree experts and a cement core has been placed in the tree which is anchored down 2 ft. into the ground. The tree at this time shows every indication of living and bearing for many years. There is a good crop on the tree this year. The tree is protected by a strong fence so that stock of no kind can injure it. It is hoped that this tree may be preserved for many years to come.

At 2 o'clock in the afternoon the party met at Winterset and the program was given in front of the monument upon which is inscribed the following words: "To commemorate the discovery in Madison county, Iowa, of a variety of apple by Jesse Hiatt, A. D. 1872, and called by him The Hawkeye. Sole right to propagate acquired by C. M. Stark, A. D. 1894, and by him renamed, introduced and disseminated throughout the apple world as The Delicious Apple. Erected A. D. 1922. Iowa State Horticultural Society, Madison County Historical Society, Historical Department of Iowa." A sketch of the Hiatt family and its influence in Madison county was given by E. R. Zeller of Winterset. Paul C. Stark showed the very active part his father had played in propagating and distributing this apple until over seven million of the trees have been set out all over the United States and if even only a third of them were left today the value of the annual crop would probably be in excess of $12,000,000. Great credit is due Mr. Hiatt for having faith in this apple and to Mr. C. M. Stark who was able to see its merits and take steps to propagate and distribute it rapidly all over the United States. The following is the address given by C. I. Lewis at that time:

The Bible is filled with references to fruit. Frequently we read of the vine, the fig and the pomegranate. We are all familiar with the old story of the apple in the garden of Eden and I have long since concluded that this apple was a Ben Davis, for had it been a Delicious, Eve would have eaten it and would have had none left to offer Adam.

Southwest Asia and Asia-Minor has been the home of most of our fruits. From that point the traders passing through Greece, Italy, through Spain, France and England, gradually introduced these fruits. With the discovery of the new world, the voyagers almost invariably carried with them plants and seed to the new land. The hardy. Spanish buccaneers introduced into Florida the seed of the citrus and have made that land one of the greatest producers of high quality citrus fruits in the world. These same buccaneers sailing down around South America introduced into Chile the olive, walnut and other fruits which later the Spanish fathers carried from that country to Southern California and laid the foundation for a marvelous horticulture. In all probability, the French traders introduced apples into Canada and possibly the Snow apple formerly may have originated from that source.



Crowd of horticulturists visiting original Delicious apple tree

The Seedling Epoch

Our pilgrim fathers and Virginia cavaliers brought with them trees and seed. Too often, however, the trees died and the colonies had to resort to the planting of seed. These early orchards produced fruit largely of inferior quality and the fruit was largely manufactured into cider, but from this seedling epoch came our well-known varieties of today. The Baldwin seemed to have originated as a chance seedling in 1740 at Wilmington, Mass., and was named by Colonel Baldwin in 1784. No one knows where the Spitzenburg came from except that it originated in Ulster County, New York, more than a century ago and it is undoubtedly the result of seed which was probably brought from New England and planted in that section. Our famous Yellow Newtown, sometimes known as the Albemarle Pippin, originated near a swamp on the estate of Mr. Moore in Newtown, Long Island. Benjamin Franklin received specimens of this fruit in England as early as 1759 and it was exported in fairly large quantities of 1773 to both the West Indies and to England. We know that the Grimes probably originated in West Virginia, from seed which were planted at that point and that this variety is very old is evidenced by the fact that it was offered to the trade in New Orleans as early as 1804. The Jonathan was described in Judge Buell's catalogue of 1826 as originating on the farm of Phillip Rick, Woodstock, Ulster County, New York. The famous Northern Spy was found in a seedling orchard at East Bloomfield, New York. It had been planted by Herman Chapin, the seed coming from Salisbury, Connecticut, the original tree having died before bearing but the sprouts lived and thus the wonderful variety was propagated. It was well distributed by 1847. The Rome originated on the farm of H. N. Gillett of Ohio and was shown at a convention of fruit growers as early as 1848. Without doubt the Rhode Island Greening probably originated as a seedling near Newport, R. I., at Green's End. Some varieties like the Winesap we know little about, as regards their origin, although the Staymen originated in 1866 at Leavenworth, Kansas. The McIntosh originated in Dundas County, Ontario, and was freely propagated as early as 1870. The Wealthy, to which we owe so much to Peter Gideon, orginated at Excelsior, Minnesota, from the seed of a cherry crab obtained in 1860 from Bangor, Maine. Had it not been for the seedling epoch in our horticultural history these varieties would never have been produced and America would have lost many valuable commercial varieties. Probably many varieties were lost—for example, we know that the Indians took seed from the colonists in New England and planted orchards in New York and Pennsylvania. Sad it is that General Sullivan in his raids destroyed the Indian orchards he came in contact with and thereby perhaps deprived us of many valuable varieties. Mr. Chapman, known as the eccentric Johnny Apple Seed, in his wanderings down the Ohio Valley, clothed in burlap, carrying a sack of seed in one hand and a Bible in the other, blazed the trail for varieties of apples through that district. Possibly, the Ben Davis group may have originated from seed Johnny Apple Seed distributed in the Ohio Valley.

The Russian Varieties

Quite a new epoch in our American pomology was the introduction of the Russian varieties. As early as 1833 we find that four Russian varieties were grown in the trial gardens at Salem, Massachusetts, and described in the catalogues and in the "Book of Fruits," these varieties being the Red Astrakhan, the Tetofsky, the Duchess and the Alexander. We know what a controversy arose later on; how Professor Budd of this state lead the fight in favor of the Russian apples recognizing much merit in them, and they have contributed much to our American horticulture.

As the pioneers swept westward over the Rockies to the Pacific coast, we find they always carried fruit with them. Llewelyn Brothers and Meek, after several trials and much privation, brought fruit to Oregon and planted some of the seed which originated the famous Black Republican and Lambert Cherry. At a banquet in England in the early part of the last century, the ladies of the table laughingly gave the seeds of fruits to the Hudson Bay travelers who were to go

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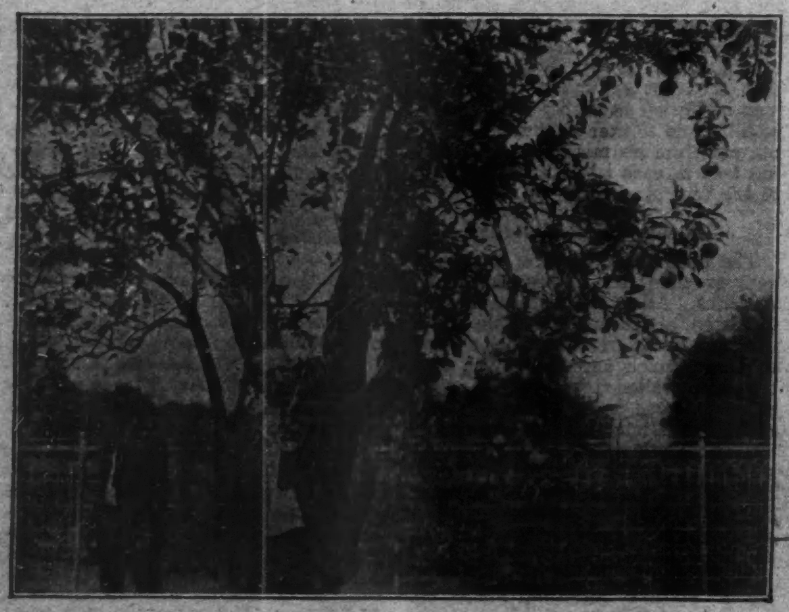

Paul Stark examining the fine load of fruit on the old tree. Typical of the Delicious, this tree has a crop practically every year

Paul Stark; Harry Lantz, Ames; A. F. Yeager, N. Dakota; R. S. Herrick, Des Moines; Lawrence Stark; Prof. N. E. Hansen, So. Dakota; C. P. Close, Dept. Agric.; Prof. W. T. Macoun, Gov. Pom., Canada; C. I. Lewis; T. J. Maney, Ames.

Canning Sweet Cider

By Ernest H. Wiegand

"AN APPLE a day keeps the Doctor away." The simple sentiment of this popular old phrase can be as well applied to the juice of the apple—cider. Sweet cider a seasonal refreshment of the rural communities where apples are grown, is not generally used or even widely known. This healthful beverage needs only an introduction to become at once a most popular national drink.

Most of us think of fresh sweet cider when cider is mentioned not realizing that cider may be had in all seasons at our grocery store where we buy other canned goods, or in soft drink establishments, where it should reign supreme as nature's purest and most refreshing drink.

A more universal use of cider would work to two distinct ends—first, give us health in the form of the drink already mentioned; and second, provide a use for almost half of the entire apple crop—for heretofore these apples have been wasted.

Sweet cider to become popular must be properly made. Fall and winter varieties of apples make the best cider. These varieties are best adapted to cider making because of their high sugar content which tests as high as 20 per cent by weight. The summer varieties are watery and make a juice which is not as palatable.

Cider made entirely from sweet apples does not appeal to the majority of people. The reason for this seems to be the extreme sweetness and lack of snap. To make a good cider sour apples should be used in the proportion of half sour and half sweet, or two-thirds sour and one-third sweet. This cider will create a greater demand than the sweet and thus bring about the development of an industry heretofore considered only lightly as a possibility.

Few canneries have undertaken the packing of cider with the idea of developing an extensive trade. The experiment has not been very successful with these plants because they failed to observe the conditions which tended towards a high quality product. Cider canning is unlike the packing of fruits and vegetables in that it is more susceptible to foreign flavors and odors.

Necessary Equipment

A word about equipment for canning seems not out of place at this time, although a detailed description cannot be undertaken. The essential pieces of equipment are: presses—either screw, knuckle-joint or the hydraulic type, with a platform 4 to 6 feet square; a good apple grater. of sufficient capacity to keep the press working; wooden or glass lined steel tanks large enough to hold about three days run of cider; centrifugal clarifier or filter with a capacity of from 2,000 to 10,000 gallons per day; exhaust box; sealing machine; open bath or agitating cooker and miscellaneous piping of either block tin, enamel lined cast iron, hard rubber or copper for handling the juice.

The gravity system for handling the juice would be the most convenient as well as the most economical method. This would necessitate a building two or three stories high.

Crushing and Extracting

The conscientious canner does not use wormy fruit. Such fruit has no

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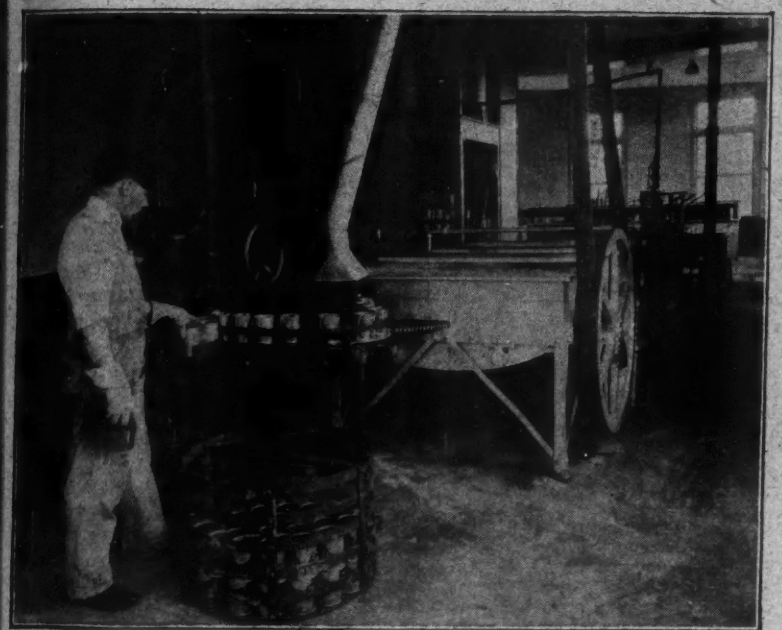
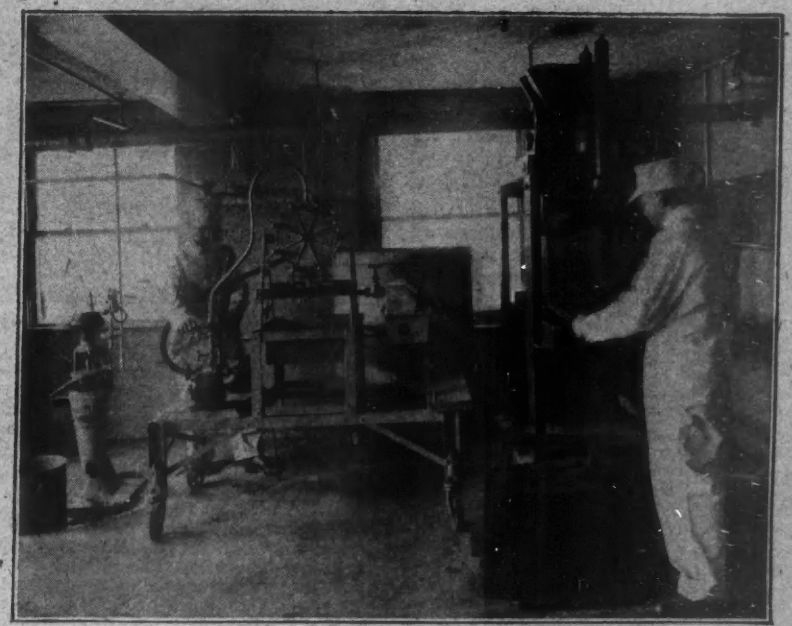


Showing Sealing Machine (Type J. American Can Co.) and Hawkins Exhaust Box



Small Hydraulic Press showing racks and forms, also Sharples Centrifuge

Vinegar Making Under Farm Conditions

By Paul Hassack

[Consulting Engineer—Fermentation Chemist

IN THE manufacture of fermented vinegar of any description, irrespective whether spirit, cider, malt, wine or other fruit vinegars are concerned, the base is always sugar, or saccharified starch, which after conversion into alcohol by yeast becomes oxidized into acetic acid (vinegar) by the activity of micro-organisms called "Vinegar Bacteria." The chemical change of sugar into alcohol is caused by a microscopically small plant, the yeast, which nature furnishes with any fruit; by the action of the yeast when budding in sugar containing liquid mediums, such as fruit juices, the sugar is split into equal parts of alcohol and carbon dioxide; the alcohol remaining in the liquid, the carbon dioxide escaping in gas form.

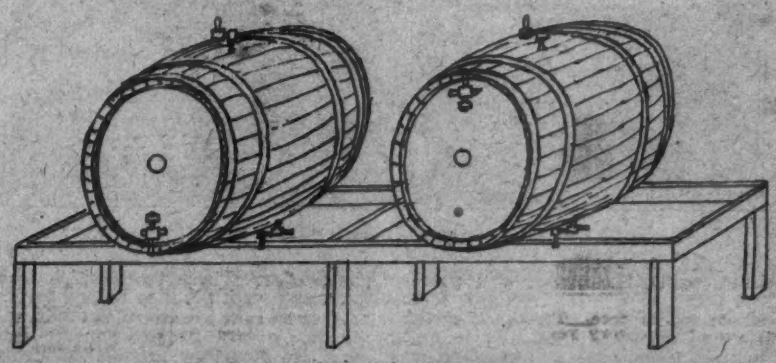
The chemical change of alcohol into acetic acid (vinegar) takes place spontaneously in the souring of fermented wine or fruit juices which when the alcohol fermentation is completed are not prevented from contact with atmospheric air or when intentionally exposed to same become infected by the omnipresent carriers of the acetic fermentation.

Accordingly the quality of the vinegar to be produced depends upon the character and quality of the raw material, that is of the kind of fruit from which the vinegar is to be made. Typical samples of vinegar made from fermented fruit juices are cider, pear or wine vinegars, or those made from melons or other fermented fruit or berry juices.

The characteristics of this branch of vinegar making is the limitation of acidity by the alcoholic contents of the hard cider or wine or other fruit juices used for vinegar making, which again is governed by the natural sugar contents of the unfermented fruit juice.

For the fruit producer who has a cider press of any old description and has made up possibly a larger quantity of cider or wines than he could use, and his stock has begun to turn sour, or one who has nerve to establish vinegar-making as an industrial side line, it is the easiest and truly well-paying way to open a legitimate outlet for such wines by converting the alcoholic fruit farm products, hard cider or wine, into vinegar. The very moment the fruit raiser finds it advantageous to become a vinegar manufacturer, no matter on how small or large a scale he might choose to operate, he will find himself in want of at least the fundamental knowledge along technical lines in order to carry through his plans successfully.

To know how to do anything on this earth right is always the nucleus of success, and with the object of helping the fruit grower along in expanding into vinegar-making, this article is designed to be useful.



Simple type of revolving vinegar generator

Sugar Content Important

The first thing to know is how many per cent of sugar does, let us assume freshly pressed apple juice, contain. It is important to know this, for it only then becomes possible to calculate how much alcohol the sweet juice will yield and how strong a vinegar can be produced therefrom. This is not to satisfy curiosity, but the vinegar laws enforced in every State of the Union, as well as the Federal pure food laws prescribe that any vinegar that is not up to the standard of 4 per cent acidity is considered adulterated and cannot be sold; and any producer, seller or retailer is obliged to strictly observe the laws in this respect, which originally were intended for the protection of the fruit grower, as well as for that of the ultimate consumer of vinegar.

The determination of the sugar contents in sweet fruit juices is the easiest thing in the world and a Balling or Brix Sugar Hydrometer floated in a glass cylinder will tell you exactly within a minute how much fermentable sugar is contained in the juice. Let us assume the reading on the sugar Hydrometer in the average sweet apple or grape juice, reads 14 per cent total extracts. Multiply 14 X 0.84 = 11.76, which results mean that there is 11.76 per cent fermentable sugar in the must. When we

(*Continued on page 26*)

Making Old Peach Trees Pay

By F. H. Jeter

TO HANDLE peaches as a broker and to grow them as a producer are entirely different problems, as Dr. Lyman Veeder of Baldwin, Georgia, can certainly testify. The selling game is fascinating, it is true, but far above this in interest, skill and method is the growing of quality fruit in paying amounts. More especially so if further complications are faced by reason of the orchard being practically worthless to outward indications.

In 1904, A. B. Veeder, father of young Lyman, came down to the Cornelia peach section and bought 210 acres of land most of which was covered with timber. The place was bought on faith and a cash payment of $250. A successful business deal permitted full payment being made in that year, however, and so part of the place was cleared and put to peaches. Some of the leading Georgia favorites were selected for planting with Georgia Belle and Elbertas predominating.

But the elder Veeder was no peach grower. He put his place in the hands of an overseer and went back to his native New York to continue his commercial brokerage business. As usually happens in a case of this kind, the tenant in charge was more concerned in getting through a liberal pay roll than in producing peaches of quality and keeping up fertility of the soil.

Dr. Veeder and One of His Prize Yearlings

Naturally the place went from bad to worse. The red hills washed, the land lost its supply of organic matter, the clay packed and gullied and disease and insects worked their will with the young trees.

But matters were in such a state on the peach farm at Baldwin that young Lyman came down to try and pull the place out of the hole. The outlook was practically hopeless and so he returned to New York after a short trial to take up a business line. Then his health failed and he decided to come back to the farm and risk his future in growing peaches.

In 1918, he returned. More because of a kind fate than anything else, the crop was good that year. The orchard produced 9,000 crates which sold for $3 per crate, bringing in a gross income of $27,000, which pulled the farm out of debt. But so far as anyone could tell, this was the dying gasp of the old trees. They were then about 13 years old. They were infested with all kind of insect and disease trouble. The land was depleted of its fertility and was washed and puddled.

Here young Veeder made his start. He had hardly seen a farm until the first visit he had paid to his father's place. He knew nothing of growing peaches nor of handling land, but he knew that from this farm must come a living for himself and wife as well as the old folks. He faced a struggle and he gave it what he had. He studied everything he could find about peaches and he worked.

Tractors and Harrows Pay

Tractors had just come into a prominent place in farming then, so his first idea was to buy one and use it in getting his land in shape. The land was washed so badly that improved implements could hardly be used, so he faced another serious problem. Both of these were solved. The gullies were blown in with dynamite and terraces run with wide slopes so as to hold the rain and give the moisture a chance to soak into the ground. Peaches need water for size and yields, so his purpose was to hold this moisture for the crop and also have the opportunity of using the tractor and harrows. As soon as he could, he went in with the tractor and harrows, and in the year 1919 he put his land in shape. The outlook was bad for a crop in that year, so Mr. Veeder violated a rule in peach growing by going up close to the old trees and cutting roots ruthlessly for the purpose of getting the land in shape. He then planted cowpeas and velvet beans to plow under. But before he did this, he pulled out about 1,600 trees, leaving only the ones on the best ridges. He then planted about 2,000 young trees, using his tractor and putting the trees on a level line around the slopes rather than in a check system. He had practically no crop in 1919, but his trees grew and his land was put in better shape. In the winter of that year, he went over his entire orchard again, plowing under his cowpeas and velvet beans and putting this humus in to a depth of about 8 inches. Then he figured that he had in the necessary humus, that his water was somewhat controlled, and for that year he could use the harrow in cultivating.

Fertilizers Pay

The ground work was thus built. But the trees were not producing the volume of fruit that would make them pay. It is true that they were old and the new ones had not yet begun to bear, so young Lyman then decided that he must fertilize for yields. He arranged with the State College of Agriculture at Athens to run a series of fertility tests in his orchards and in the meantime, he began some work of his own. It should be said here in passing that the results of his work in this respect is being largely followed by other peach growers and also that he perhaps has a better knowledge of the plant food needs of peaches in that section than any other grower. For the past three years, he has fertilized liberally but intelligently, and because of it he topped the market last year for the Cornelia section and his crop looks good for this year.

Mr. Veeder gives his trees a good application of nitrogen in the early spring, and follows this with phosphate later. Those trees which look weak or do not seem to be as healthy as they should are given another application of nitrogen later in the season. No fertilizer is wasted. It is used with intelligence and foresight and the results are gratifying. Such excess as might be applied is taken up by the cover crop and returned to the land again when these are plowed under.

Interior of a Georgia Packing House

Studies His Business

Just what has been the result? As Mr. Veeder told me, he worked his crop with one hand, figuratively speaking, and held a book in the other, following instructions as he went. Last year he had 5,000 bearing trees, most of them old, stubbed back stuff and all of them beyond the age of successful production, according to the rules. But these 5,000 old trees brought back by judicious handling produced an average of two crates of marketable peaches to the tree. The quality was so good that he realized $28,000 gross returns from the 10,000 crates or about $500 per acre. But here is the remarkable thing. Out of 10,000 crates there were only 40 bushels of culls and this can be verified by the reports of neighboring growers. His peaches ran from $3.00 to $3.50 straight f. o. b. loaded on car at Baldwin.

Grades Carefully

Mr. Veeder says, "My crop ran about 60 per cent 'Red, White and Blue' label, which is my best grade. These were absolutely without a blemish, or a spot or speck of any kind on them. They were as nearly perfect in size, shape and quality as peaches could be. The second grade, or red label, were about 32 per cent. These were as good as the first grade, having only some spot or imperfection to detract from them, and are about as good as some folks first grade. About 8 per cent of my sales were made under a plain label, which was all the remainder of the marketable fruit.

"I had the fruit graded by hand three times without haste and with every precaution taken to see that no bruises were caused. The peaches were handled from tree to car in about an hour's time and were then precooled by blowing fresh air over the ice before the car was closed."

It is a fine tribute to Mr. Veeder's method of packing and handling that his fruit has led the New York market since 1918 in both quality and price. He has done this by eliminating culls in growing quality fruit on a healthy tree. He gives thorough spraying, this operation having precedence over everything else in season. He uses about 6 gallons of spray to a tree or 180 gallons to 30 trees. About 400 pounds pressure is used and the work done carefully under his personal direction by well trained white operators.

Ready for the Harvest

Loading Georgia Peaches Into Iced Cars

Considerate of Help

Mr. Veeder's methods are interesting. Each afternoon during the spray

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A National Committee

HORTICULTURE, from the national point of view, is probably the poorest organized of any of the agricultural groups. We are referring specifically to organization which brings about helpful legislation or prevents destructive legislation on the one hand and organization which means the education of the public on the other hand. We have no body of horticulture comparable with the National Milk Producers' Association, the live stock associations, the wood growers associations, etc. These boards and bodies are ever on the watch that national or state legislation is not passed which would be inimical to the industry. They are always ready to foster helpful legislation and to fight laws which are unjust to the industry they represent. Whenever a big, national meeting is held in the form of an exhibit, you will always find them present with very attractive educational exhibits, educating the American people to the value of meat, milk, cheese and kindred products, both from the point of view of food in the diet and also from the point of view of healthfulness. We are speaking entirely from the producer's point of view. There are certain horticultural bodies such as the International Apple Shippers' Association, the Western Fruit Jobbers, the Fruit and Vegetable Shippers' Association, the National Nurserymen's Association and others too numerous to mention, who generally are watching legislation very carefully, and who issue considerable publicity which is helpful to the business they represent, but this has little to do with the problem facing the producer, where we find practically nothing is being done. If bad legislation is attempted by Congress, we rush a few men to Washington, hoping to avert the passage of such legislation, but there is no systematic, national work being done to see that right laws are passed, or to see that the work is properly fostered by educating the American public to the fact that fruit is an economical, healthful food, that it is cheap to buy, that it is not a luxury, that fruit is something more than eating an apple a day to keep the doctor away. A national body is needed to handle these problems; possibly it will be the Federated Growers; or perhaps better, it is a job for the American Pomological Society to undertake; or the old Committee of Twenty-one which was instrumental in bringing into being the Federated Fruit Growers. Someone should do this work and a plan should be evolved, financial arrangements should be perfected and this body should be put to work to see that horticulture is properly protected to the same extent that other lines of agriculture are being fostered and protected.

The Strike Problem

CONSUMERS and producers are beginning to realize that the strike problem is a very serious one in this country and it has developed to the point where it is becoming a real menace to our national welfare. No group of workers divided by race, creed or vocation have any right to hold up the entire nation at any time. Capital and labor do not have this right. The general public must receive consideration in these matters. The prevailing coal and railroad strikes will result in the consumer paying an increased price for what he eats and wears. There is a tax on every consumer of this nation; it has become a very serious tax on the producers. Millions of dollars worth of farm products have gone to waste this summer owing to the railroad and coal strikes. This is too heavy a tax to ask agriculture to carry, and every loyal citizen should back up the administration of the government in any move which they should make to try and prevent the occurrence of such conditions in the future. Some method must be worked out whereby we can adjust these matters promptly and with justice to all. The nation at large could learn a good lesson from agriculture. Let us see what agriculture is receiving as compared to other industries in this country.

Take the question of wages of the coal miner. According to Secretary of Agriculture Henry C. Wallace, the coal miner's wage per ton in 1913 would buy 1.1 bushels of corn in Iowa; in 1921 it would buy 2.1 bushels of corn. In 1913 the ton wage would buy .7 of a bushel of wheat in North Dakota, and in 1921, .9 of a bushel. In 1913 it would buy 4.7 pounds of cotton in Texas and in 1921 8.5 pounds; in 1913 seven pounds of hogs in Nebraska, and in 1921 fourteen pounds. Many other items could be cited which would give similar results.

Take the average yearly earning of railroad employees. We find that in 1913 it would buy 1492 bushels of corn in Iowa, while in 1921 it would buy 4112 bushels. It would buy 1028 bushels of wheat in Dakota in 1913 and 1466 bushels in 1921.

Let us look at the freight side. In 1913 the freight revenue per ton mile received by the railroads would buy 1.4 bushels of corn. In 1921 it would buy 3.1 bushels. In 1913, ten pounds of hogs in Nebraska, while in 1921, eighteen pounds. In 1913, one bushel of potatoes in New York and in 1921, one and one-half bushels.

Let us look at the price of coal F. O. B. mines. It would buy 2.4 bushels of corn in 1913 in Iowa, while in 1921 it would buy 6.2 bushels and in 1922 it would buy 9.3 bushels. In 1913 it would buy 16 pounds of hogs in Nebraska; in 1921 it would buy 36 pounds and in July 1922 it would buy 53 pounds.

We could quote many other items from Secretary Wallace's report but space will not allow. The purchasing power of the wages of the railroad employee in 1921 was 51 per cent greater than in 1913, while the purchasing power of the coal miner was 30 per cent greater in 1921 than in 1913. The purchasing power of the farm hand who works for wages in 1921 was 4 per cent less than in 1913, while the purchasing power of the farmer himself was on an average of from 25 per cent to 45 per cent less than in 1913. In short, the farmers, numbering almost one-third of our population, have borne altogether the heaviest burden of deflation, yet they have never gone on a strike. They have met their heavy losses bravely and they have kept planting and producing and have set before the entire nation an example that all could well emulate. If we did, tne country would soon be returned to a full measure of prosperity.

The Grape

WE HAVE used on our cover this month a beautiful picture of the Muscat-Hamburg, a grape which is grown especially by forcing under glass, a grape of high quality and attractiveness. Grape culture seems to be about as old as the human race itself, and why should it not be? In the grape we have one of the most healthful fruits which we have, whether the grape be taken in the form of fresh fruit, juice, or raisins and currants. The grape should find a rightful place in the diet of every family because of its relative cheapness and its healthfulness. All people should eat an increased quantity of grapes; few fruits are easier to digest.

Senator Charles A. McNary

IN SENATOR McNary the fruit industry of America has a real friend. Senator McNary, while being a lawyer, is nevertheless a farmer working on a large scale. He is interested in a farm at Salem, Oregon, on which he raises large quanties of cherries, filberts, prunes, walnuts and some general farm crops. During all his spare moments, while he lived at Salem, you could find him on this farm. He is a national authority on filberts and gave his own personal attention to studies of pollination, pruning, etc. We have had no man in Congress who has been quicker to bring the fruit grower relief. Wire Senator McNary today and you get a response tomorrow. A year or two ago the International Apple Shippers were trying to get through some needed appropriations in horticulture; the progress was very slow. They wired Senator McNary and got almost immediate action. He has helped get protective tariffs for the nut industry and fruit industry, tariffs which were greatly needed owing to high freight rates and the high cost of production in this country. He has been very influential in getting through appropriations in order that the Department of Agriculture could undertake certain investigations which were sorely needed by the great horticultural industry.

Horticultural Exhibits

THE time of the year is fast approaching when very attractive horticultural shows and meetings will be held in nearly every state in the Union. Already plans are out for large meetings at Council Bluffs, at Seattle, at St. Louis and Grand Rapids. Fruit growers should strain a point to try and attend these horticultural meetings and exhibits. They pick up a great deal of information of value through the entire year and they get a certain amount of relaxation which is essential to the best living. After visiting a fine horticultural show, a fruit grower always comes away

Belt Conveyors in Fruit Packing Plant

By W. A. Scott

METHODS of handling fruit, in connection with sorting, grading and packing, have brought into use a line of equipment that facilitates the work and does the least amount of damage in the way of bruising and puncturing the fruit. The devices and contrivances described herein are those utilized in the grading, packing and the movement of apples at the plant of the Spokane Valley Growers' Union, at Opportunity, Wash. First, it may be of interest to state that this co-operative organization has 325 members whose orchards range in area from 2½ to 10 acres. There are a few of 20 and 40 acres each. Most of the bearing trees are about 14 years old, and the land is irrigated by pumping water from wells into an underground system of concrete pipe, having risers to the surface. This growers' union, in the last 4 years, has been producing and marketing apples as follows: In 1919, 193,375 boxes, netting $1.36 per box; 1920, 205,067 boxes, netting $0.645 per box; 1921, 158,659 boxes, netting $1.15 per box; 1922, estimated at 300,000 boxes, to be marketed later. The organization buys box shook from the box manufacturers for the use of the growers and for the packing house.

The packing-house building is 320 ft. long, 40 and 60 ft. wide, and three stories high, including the full basement story. The basement room is 10 ft. high, reaching 5 ft. above the ground level. The old part of the basement has a concrete floor and solid 8-in. concrete side walls. The new part has a floor made of 2 by 4's, set on edge, with air spaces between, and the room is supplied with fresh air by forcing it from the outside through pipes below the floor, distributing it through floor openings. In like manner the air in the room is kept to a certain humidity by jets of water from ½-in. pipes, connected to a main water line running through the building. The walls of the new part of basement are composed of 8 ins. of concrete on the outside, and built up on the inside with 1 in. of shiplap, then 2 by 4's for an air chamber, and finished with layers of building paper and cedar boards. The basement rooms are mainly for storage.

The next story above is the main shipping room, the floor of which is on a level with the concrete shipping platform on the outside. Its walls are 14 ins. thick, made up of siding, paper, shiplap, heavy insulating material, cedar flooring, with three sets of 2 by 4's, so placed as to make three dead-air chambers. The top story, utilized as the sorting and packing floor, does not require frost-proof walls, and is enclosed by ordinary lumber construction.

Apples in boxes are brought from the orchards by motor trucks, and by an inclined belt conveyor are carried to the sorting floor, each grower's product being handled separately. They are distributed as may be required to 17 sorting tables, two women sorters being employed at each table. There are 10 short 4-in. woven-cotton belts moving slowly across each table, and running between guides. The apples, which are delivered to the tables in boxes by gravity conveyors, are taken up by hand and placed, according to grade on the several table belts. That is, there are three belts for extra fancy apples, three for fancy, and three for grade C; also one belt for the culls. Each sorting belt discharges its apples, one at a time, upon a long canvas conveyor that runs longitudinally with the building. As each apple drops off the sorting belt upon the long conveyor it trips a tilting device by which a count is registered. These devices are tally keepers of the number of apples of the several grades, belonging to a particular grower, that pass over the sorting belts. There is a slight depression under the conveyor at the point where the apples drop, making a sort of air cushion that prevents the slightest bruise on the surface of the fruit. The 9 sorting belts that move across the surface of each table discharge upon 9 conveyor belts, with a 10th sorting belt and conveyor for the culls. The conveyors are of woven cotton texture, are 5, 6 and 7 ins. wide, and of different lengths. The longest one, the first shown in foreground, has a length of 265 ft. between pulley centers. Each of the others, taken in order, is 12 ft.

(Continued on page 23)

Woven cotton conveyors carrying graded apples to wide packing belts

Sorting Table showing discharge ends of short sorting belts from which apples drop to conveying belts

Fruit Growing in New Zealand

By the Honorable W. H. Triggs

Member of the Legislative Council of New Zealand

THE Dominion of New Zealand consists of two large and several small islands in the South Pacific, with a total area of 103,861 square miles, or rather more than that of Great Britain. The population is about 1¼ millions, of whom, it may be mentioned, nearly 11 per cent served overseas in the Great War. The principal industries are the rearing of sheep and dairy farming, the chief exports being wool, frozen meat and dairy produce. It is only quite recently that attention has been given to commercial fruit growing, but the results have been so encouraging as to give ground for the belief that in a few years the export of fruit will rank next to the export of dairy produce, which, during last year amounted to nearly twenty million sterling (over 80 million dollars).

New Zealand may be said to have stumbled into the business of fruit growing almost by accident. In the heart of the South Island, in a district known as Central Otago, when the rich alluvial gold-fields gave out some years ago, it was noticed that the gardens which some of the miners had planted around their little huts grew exceptionally fine fruit. Although the soil was a micaceous schist, which looked hopeless from an agriculturist's point of view, it appeared that it only required irrigation to produce fruit of the finest quality. Some of the miners took up the new industry, and have done remarkably well. They lack the excitement and the occasional rich prizes which fell to the diggers in bygone days, but they have comfortable homes, a healthy occupation, and steady incomes.

So, in the Nelson district, in the North of the South Island, fruit growing has proved the solution of the problem as to what could be done with land that seemed too poor for the agriculturist, or even for the sheep farmer. Land in the Nelson district, covered with stunted scrub and fern, which sold ten or twelve years ago for 7s 6d (less than two dollars) an acre, has been sold for apple orchards at from £15 to £25 an acre (say, 60 to 100 dollars). Similarly, what are known as "the poor gum lands," in the Auckland province, are now being turned into beautiful orchards. These are pipeclay lands, which have been turned over by diggers for kauri gum—the fossil gum which is used so largely in America for making varnish. Both Nelson and Auckland have the advantage over Central Otago that there is a good rainfall in the former districts while in Central Otago, as already mentioned, irrigation is necessary.

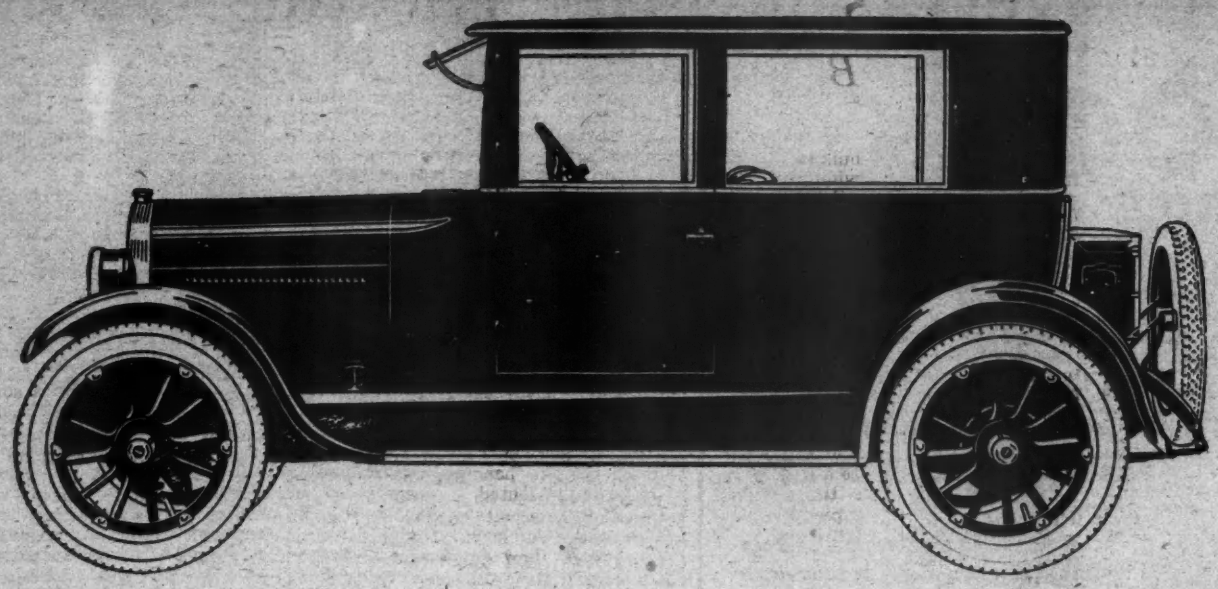
Wide Range of Latitude

As the main islands of New Zealand run from North to South, and extend over more than fourteen degrees of latitude—namely from 34 deg. S., to 48 deg. S., there is a great range of climate. The extreme North is subtropical—New Zealand, it must be remembered, is in the Southern Hemisphere—while in the Southern districts, especially inland, there are heavy frosts in the winter. A marked feature of the climate is the abundance of sunshine. Oranges, lemons, and other sub-tropical fruits are grown in the Auckland district, as well as apples. In Hawkes Bay (another good fruit growing district in the North Island), and in Nelson and Otago, orchardists devote their attention chiefly to apples, pears, stone fruits and strawberries.

The latest statistics, which have been kindly furnished to me by Mr. J. A. Campbell, the Government Director of Horticulture, show that the total area in commercial orchards throughout the Dominion at the end of 1921, was approximately 30,000 acres. The 1921 fruit crop was estimated at slightly over 2 million bushels, made up as follows:

Apples	1,500,000 bushels
Pears	200,000 "
Stone Fruits	310,000 "
Total	2,010,000 bushels

(Continued on page 17)



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Trunk Extra

Have You Seen Oakland's 1923 Closed Cars?

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Both of the new 1923 bodies are built by Fisher. Their new and distinctive beauty; their symmetry of line and authentic grace, complemented with a wealth of interior appointments and refinements—some luxurious, many exclusive, but all useful—mark them for instant and uncommon admiration wherever fine cars are gathered.

Mounted on the standard Oakland chassis, these new models are powered with the six-cylinder, overhead-valve, Oakland-built engine—the only engine in the world with a performance guaranteed in writing for 15,000 miles.

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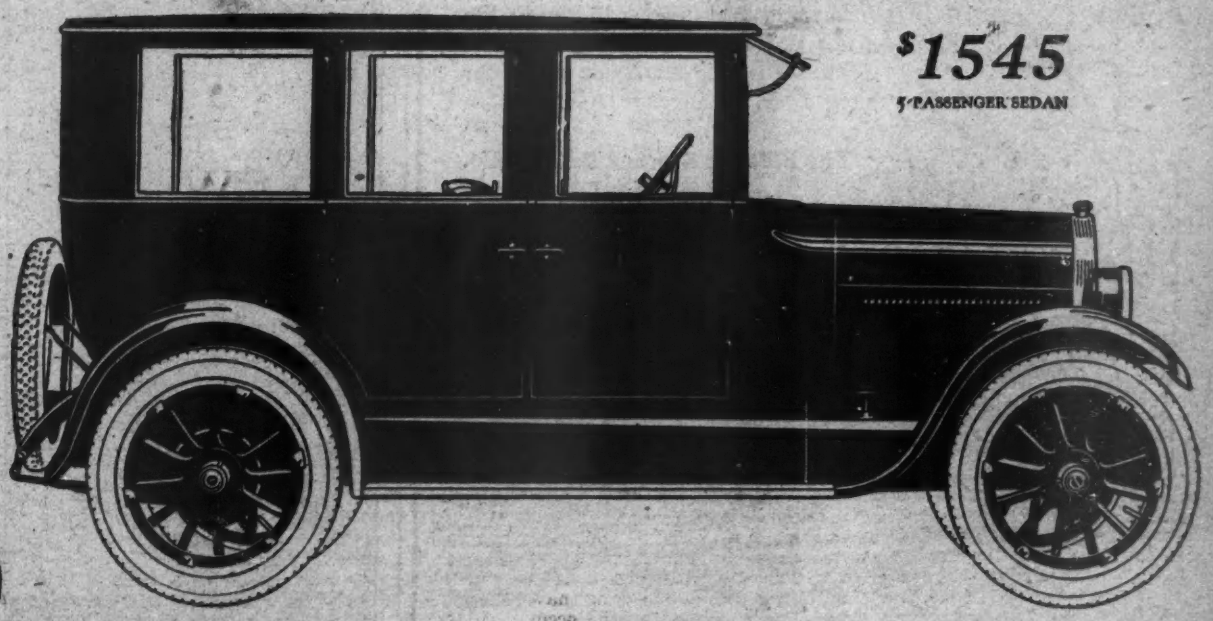
We ask only that you see these new models and compare them critically with any others built. After that, you will share our conviction that they embody a higher order of beauty and utility than you can possibly find elsewhere at prices so remarkably low.

OAKLAND MOTOR CAR COMPANY, PONTIAC, MICHIGAN
Division of General Motors Corporation



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The New Oakland Six

The 1923 Series

Roadster, 2-Passenger	$975	Coupe, 2-Passenger	$1185
Touring Car, 5-Passenger	995	Coupe, 5-Passenger	1445
Sport Car, 4-Passenger	1165	Sedan, 5-Passenger	1545

All prices f. o. b. at Factory

The Delicious Apple

(Continued from page 6)

to Vancouver, Washington. Some of these seeds were planted and thrived in orchards in the Vancouver district. The Mormons as they wandered westward to Utah always instructed their followers to bring seeds of all kinds and early established in Utah the foundation for a permanent horticulture.

Origination Accidental

Some of the work in originating the varieties I have described was probably intentional, an effort being made on the part of some to originate new varieties. The greater part of it, however, was accidental and some of our finest varieties came very nearly being destroyed. The Northern Spy had a very narrow escape. The Delicious apple, of which we are here today to dedicate a monument, perhaps narrowly escaped destruction. This variety occurred as a sprout on a Yellow Bellflower which was grafted on Vermont seedlings. Suppose some stray steer had eaten and destroyed the shoot, we would not today have the wonderful Delicious apple.

Down in Florida they have a new variety of orange known as the Temple Orange, which is said to have originated from the sprout of a seedling root, following a disastrous disease at the top of the tree.

The Crowning Point

The Delicious apple represents the crowning point of achievement in the origination of American varieties. No variety has been originated which is superior to the Delicious in quality; few can equal it in production. On the Pacific coast, where I am very familiar with orcharding, it is not uncommon to find this variety yielding as high as 750 packed boxes per acre, whereas some of the older varieties often do not yield more than 200 boxes per acre. The high yielding varieties like Delicious, Jonathan, Winesap, Stayman and the Winter Pearmain which tend to produce annually, big crops, are the varieties which are making fruit growing profitable in the west. No variety of apple of American origin ever had quicker distribution than the Delicious and none were ever accepted more readily by the American public. It is one of the best-known varieties which we have, and rightly so, for its large size, its beautiful color, its delicious aroma and quality. In the origination of the Delicious a high standard has been set for us in the development of future varieties. How proud the state of Iowa must feel that it was the mother of this wonderful variety. Gradually, some of the older varieties are slipping by the wayside; the Baldwin has probably passed its zenith, such factors as being an irregular bearer, winter killing frequently and being subject to Baldwin Spot, have contributed to restrict its planting.

What tree surgeons have done for the old Delicious apple tree

Group of horticulturists in the Enright orchard, Winterset, Ia.

The Future Demand

The future is going to see the demand for quality fruits, coupled with productiveness, vigor and good appearance. We see through all the ages man has gone through all sorts of hardship and privation to carry fruit with him to the ends of the earth. As a result, some races, especially in the tropics, subsist on fruit alone. Can we not, with the later generations, show that same zeal in the improvement of our varieties and the origination of new ones? What more can we do for posterity than to bring forth beautiful, superior fruits, nuts, flowers and vegetables.

The time is too short for me to tell of the tragedy and romances connected with the development of the American grape industry or the wonderful development of the small fruits, and of our flowers—the American rose and chrysanthemum; nor can I go into detail concerning the wonderful work that our plant breeders, such as Burbank and Hansen, have done, or the work which the Minnesota Experiment Station is accomplishing, of the splendid plant breeding work being inaugurated in this state, of the work in seeking a blight-resistant pear which is being carried on by Professor Reimer of Oregon and by the Experiment Station here, or the remarkable work being done on the strawberry by Mr. Etter of California. These men have blazed the trail; they have shown us that plants are plastic, that it is possible to breed them and improve them. You, of the colleges and experiment stations who are present have a great work before you in showing what characters our present varieties possess which they will readily transmit to their offspring, what variations take place, what varieties are promising as parents in breeding experiments, what laws of breeding and selection we must follow to get the best results.

Interesting stories from three of our oldest customers

"I received my first Montgomery Ward price list in 1872, and I became a customer almost immediately. The catalogue has been coming regularly ever since, and I have been doing business with Montgomery Ward & Co. practically all of that time.

"I wish to state that in all of those years there has never been any occasion to make a complaint or to return any goods we have ordered from Montgomery Ward & Co."

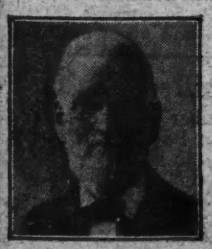
William McCandless, Sloan, Iowa
A Customer Since 1872

For fifty years, ever since Montgomery Ward & Co. was started, Mrs. Merrick has taken a keen interest in its development.

"I have been a customer from the first.

"I have always had the most courteous treatment from you, and am sure I believe that much of your success has been due to your unfailing policy of fair dealing."

Mrs. Emma E. Merrick, Malcolm, Iowa
A Customer Since 1872



Mr. Beatty is a real pioneer. He is the only man now doing business in Helena who came to Montana in 1865. He served under General Johnson in Utah (1857-9). He finally settled in Winston, Montana.

"I have traded with Montgomery Ward & Co. for 45 years," he said, "and I have never found anything wrong that has not been satisfactorily settled. If you continue to deal as fairly with your customers as you have in the past, you will surely prosper."

Mr. George Beatty, Winston, Montana
A Customer Since 1877

Millions Buy from this Book on Faith in the Name "Montgomery Ward"

This book is saving many millions of dollars for the American people.

Is it saving money for *you* and for *your* family? Are you taking *full advantage* of your opportunity?

This book—our Golden Jubilee Catalogue—celebrates our 50th Anniversary by offering you the lowest prices possible on everything for the Home, the Farm and the Family.

It is filled with bargains—with merchandise of high quality. And every price is a Money Saving price for you.

For Fifty Years Montgomery Ward & Co. have earnestly worked to serve the American people.

Today millions of people are buying from this book on faith in the name "Montgomery Ward."

And it is our policy to keep faith with our customers. It is our policy to sell only serviceable goods, to serve you promptly — always to offer you a saving — and to deal with you always in the full spirit of the Golden Rule.

Montgomery Ward & Co. begins its second half-century of business existence. Yet today it is filled with the spirit of youth; alert, looking ahead, improving its service, filling orders quicker, and offering lower and lower prices.

To buy from this Golden Jubilee Catalogue is to be guaranteed a definite saving and entire satisfaction—and back of this guarantee is the reputation of Fifty Years of fair dealing.

Buy from this book. Fill all your needs from this book. Consult it daily to find the right price, the lowest price for dependable, reliable goods of standard quality.

The Oldest Mail Order House is Today the Most Progressive

Montgomery Ward & Co.

Chicago Kansas City Saint Paul Fort Worth Portland, Ore.

Rambles of a Horticulturist

(Continued from page 4)

he started his fertilizing experiments. This plum orchard of Mr. Hawley's is worth driving a long distance to see. In addition to the Monarch, he also grows the Grand Duke and Arch Duke. He is conducting some elaborate dusting and spraying experiments on the control of shot hole fungus on plums.

The Benton Gebhardt orchard in the same vicinity is an interesting one to visit, containing some 80 acres of peaches and apples, and a few pears. It also has a good collection of plums. This orchard has one of the largest collections of varieties in the state and Mr. Gebhardt has made a special study of fruit varieties.

Ludington District Attractive

The Ludington district is one of the finest we visited in the entire state of Michigan. There is an area there which is estimated to be about 20 miles in length, where the soil is very deep and is of a clay loam character, and is extremely productive. We visited the Cherry Ridge Farm of Mr. Fitch, and had with us Mr. Chris Bemis, County Agent, who is conducting a number of interesting experiments on the use of sulphate of ammonia and acid phosphate on Baldwin and Hubbardston apples. In every case the results are striking wherever the fertilizer is used. The work will probably be conducted over a series of years and reported for the benefit of the growers of the community. The soil is very strong in lime; in fact, Mr. Bemis says the subsoil will show 25 per cent lime content and a very strong lime-reaction can be obtained from the top soil. A cherry block which had not been growing very well for some three years was remarkably benefited by the application of three pounds of sulphate of ammonia per tree.

In the Ludington district we also visited the orchard of C. D. Kistler. This is a rather small orchard, there being only 260 trees in the bearing block, but it is in remarkably fine condition. The trees are unusually large. These 260 trees two years ago produced $3,700.00 worth of apples. About one-sixth of the orchard is in clover sod and five-sixths in clean tillage with cover crops. In addition the owner has been applying sulphate of ammonia for the past two years. This orchard was set out while Mr. Kistler was a boy and he has had something to do with it ever since. It consists of mixed varieties such as Baldwin, Greenings, King, Wagner, Nonpareil, Wealthy Duchess and Stark. The trees, if anything, probably grow a little too much wood and are a little thick, but they have a remarkably fine crop this year. The check trees did not produce the growth, nor have they the crop which was found on the trees which were fertilized. Mr. Kistler has a very fine young orchard started, principally of Hubbardston, and these he now has in clover sod and mulches the trees. The first crop is cut for hay and the second used for the mulch. There are several rows of very fine Bartlett and Flemish Beauty pears. These pears are strong and sturdy and are heavy producers.

Lake View Orchards

At Manistee there is a very large orchard of 475 acres known as the Lake View Orchards. This orchard is interesting principally from the point of view that it was a very large orchard formerly set out to be sold or managed in separate units but it is now maintained and managed as one unit. The varieties have been so set as to accommodate themselves to the management of small plantings and not huge plantings. There are also too many varieties on the place for the best results but the standard varieties such as Transparent, Duchess, Wagner, Baldwin and Stark make up the greater part of the planting. There is a very good equipment on the place, in the way of buildings and packing houses and there are most excellent shipping facilities. There are 140 acres of young apple trees on the place that are not in bearing. The orchard has a mixture of fruits, there being quite a large number of blocks of cherries scattered throughout the planting.

Five large, powerful spray outfits are used to help keep the fruit clean. Two auto trucks are employed in hauling the fruit back and forth to the boat landing, as much of the fruit is sold across the lake in Wisconsin.

Bear Lake Orchards

A. L. Hopkins of Bear Lake is a very progressive orchardist and now has 120 acres of fruit, growing such varieties as Stark, Hubbardston, Winter Banana and Gano in his older orchard, while in the young orchard is found a good sprinkling of Grimes, Jonathan and Northwest Greenings. He also grows a good many peaches, having some very fine blocks of Elberta and J. H. Hale. He believes in keeping up the fertility of the land and he was drilling in cover crops about the first of August. He also feeds the ground with stable manures. He handles a large number of feeders in the winter and is thus able to keep up the fertility of his soil. He has a beautiful, rolling site overlooking Bear Lake, has the best of air and soil drainage, and his trees show the healthy, green color which comes from good care and proper feeding. He has been getting a crop of Jonathan every year since the trees were five years old. The soil is a silt loam and seemingly productive. As an indication of the frost-proof situation, he stated he had picked peaches up to late November. The northern counties of the lower peninsula of Michigan have an unusually long growing season, much more so than some of the central portions of the United States.

Argentine Fruit

PEARS have also been sent from Argentine and have been on display in England. These include such varieties as Winter Nelis, Louise Bonne of Jersey and Pitmaston-Duchess. Peaches, plums and grapes were also sent from Argentine but many of them were not of very attractive appearance and have not been packed quite as well as those coming from South Africa, Chile and other sections.

Chilled Fruits

FOR a number of years berry growers on the Pacific coast have been putting fruit in barrels with or without sugar and either chilling or freezing the same and shipping it to all parts of the United States. Of late they have been freezing berries in crates. Cherry growers in Michigan are doing a very large business in freezing red cherries in barrels and selling them to the restaurant and pie trade. Ten thousand crates of frozen berries were put down by the Missouri Valley Cold Storage Company this past season. The work was first started in 1917 and found to be very successful and was gradually developed to large proportions.

In writing advertisers, mention The American Fruit Grower Magazine

DODGE BROTHERS
BUSINESS SEDAN

With this car, Dodge Brothers have literally created a new type of Sedan.

They have combined open car ruggedness with closed car protection and smartness.

They have demonstrated, once for all, that a sedan can be as practical and almost as inexpensive as an open touring car.

The body is built of hand-welded steel because steel is sturdy, and will take a permanent, oven-baked finish, eliminating forever the cost of repainting.

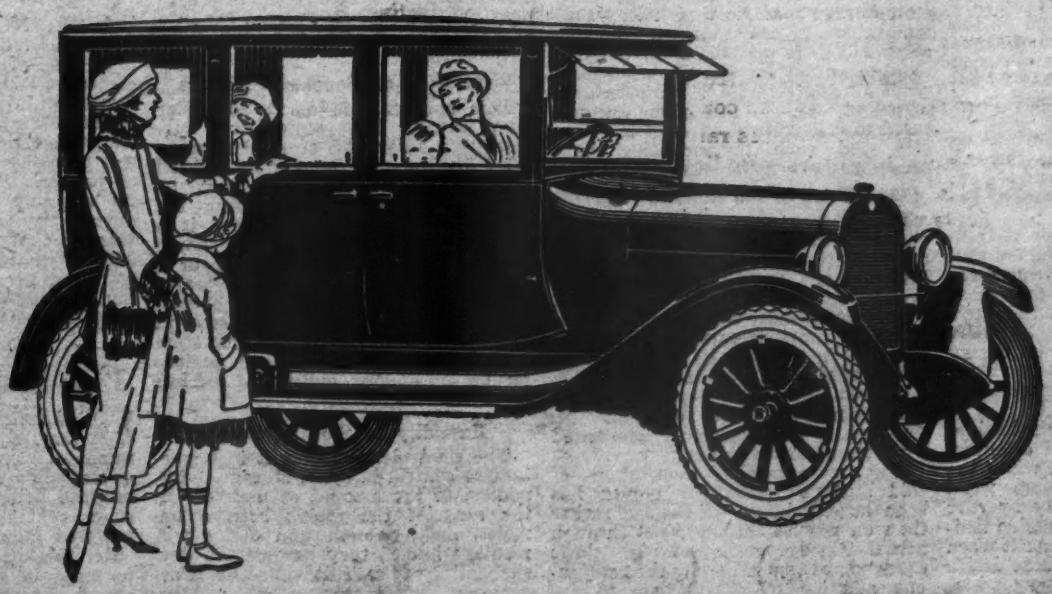
The seats are upholstered in attractive, genuine Spanish blue leather, because leather will wash and wear.

To further enlarge the car's usefulness, the rear seat, back and side cushions, seat frame and foot rest are quickly removable, giving sixty-four cubic feet of loading space in the rear compartment. The manifold uses made possible by this unique feature are readily imagined.

The top and rear quarters are of non-rumble, fabric construction, conforming with the present attractive vogue. From cord tires to curtain cords, the fittings, inside and out, are distinctive and complete.

In fact, every detail of the car emphasizes its striking adaptability to business as well as social use.

The price is $1195 f. o. b. Detroit



Patents Pending

Handling Apples in Cold and Common Storage

(Continued from page 4)

rooms and by being vigilant can secure a much better stored apple than is usually the case.

It is impossible in this brief discussion to go into details of common storage house or cellar construction. It must be remembered, however, that the cooling of the rooms and of the fruit is dependent, in the case of above ground storage, upon the circulation of cool air around the fruit. To secure this, it is essential that large intake openings be placed so that the air may enter beneath the fruit and that large ducts be provided through the ceiling to draw the warm air off. The fruit should not be stacked too closely.

The operator should have a thermometer outside the building as well as in the storage room, and whenever outside temperatures are below those in the room all intake and outlet ducts should be opened. This will usually be at night, but may also be during all of certain days. When the outside air becomes warmer than the inside, all openings should be closed.

The point that should be emphasized is the necessity for special attention to the storage in the fall, while the rooms are warm. The most rapid cooling can be secured only by care to open the storage when outside temperatures are low, and to close it when they become higher than those inside the room.

In cellar storage, exactly the same principles apply. The cellar will cool somewhat more slowly in the fall than the above ground storage house because of the warming influence of the ground at that season. But the same care should be given to the cooling of the cellar that is given the above ground storage. It should be constantly borne in mind that every degree that it is possible to reduce the temperature will assist correspondingly in holding the fruit. After freezing weather sets in, it is possible, if sufficient care be used, to hold the temperature of the cellar or the common storage room to very nearly that maintained in cold storage. This is often not done and the total possible storage period for the apples is correspondingly reduced. Temperatures of 40° to 45° F. are often encountered in cellar storages even in January, and such temperatures must mean a short apple storage term.

Ventilation of the Storage Rooms

One of the most widely discussed questions at the present time is that of ventilation in apple storage rooms. Many things have been claimed for ventilation of cold storage rooms, some having even claimed that ventilation is more important than temperature in the storage of apples.

The subject of ventilation must be discussed for cold storage distinct from common storage, for in the latter case it is inseparably associated with temperature control.

The recommended ventilation of cold storage rooms for apples has been largely based on theory, rather than on results accomplished through actual tried ventilation. In those cases where ventilation by the continuous addition of outside air to the rooms has been tested out, there has been no improvement in flavor, appearance or time of keeping of apples held under ventilation as compared to similar fruit held without ventilation. Ventilation has been recommended as a means of scald control, but its efficacy in controlling scald on fruit packed in barrels or wrapped boxes in cold storage rooms is extremely doubtful. Many storage managers follow the plan of opening all doors and aerating the rooms in the winter time as frequently as possible. This policy is undoubtedly sound, but the value of elaborate mechanical systems for introducing outside air into cold storage rooms has not been established.

Ventilation of Common Storages

This subject was discussed under temperature. It appears that if sufficient air enters the storage room to effect the required cooling it will be sufficient to ventilate the fruit as much as is necessary. During the winter, following the time when it is possible to ventilate daily, care should be exercised to ventilate whenever a day occurs that is sufficiently warm so that the air ducts may be opened without freezing the fruit. Again in cellar and above ground common storage the value of mechanical devices for the continuous addition of air has not been demonstrated.

Humidity in Storage Rooms

The final element that it is important to control in apple storage is humidity, or the amount of moisture in the air. If the rooms become too moist, mold growth and decay will result, while if they become too dry, shrivelling of the fruit will occur. Fortunately, apple storages are seldom too moist, and if too dry, the trouble is easily remedied.

Lack of moisture is much more likely to occur in common storage than in cold storage. If the fruit is packed in barrels, wilting will not be appreciable, even if the storage is very dry. But for fruit stored in open boxes, ventilated crates, or in baskets, is important that the humidity condition be watched closely.

In cold storage, moisture may be added to the air by blowing air over baffles of absorbent cloth that dip into water. Also raising the temperature of the brine used in cooling the room, if that system is in use, will result in higher humidity. Allowing the pipes to become heavily coated with ice will have a similar effect.

But it is in common or cellar storage that the fruit is particularly likely to wilt, especially if stored in crates or baskets. Consequently, it is nearly always essential to add water. This may be done in various ways—by blowing air over moistened baffles, by sprinkling the floor frequently, by filling concrete troughs with water, or, if none of these methods is feasible, by setting a number of tubs of water about the storage. Attention should be given for the appearance of molds, and the adding of water be stopped or reduced if mold appears.

The following summary, then, may be given for the best handling of apples for and in storage: Let the fruit become fully ripe on the tree, then pick and grade carefully. Remove all apples with breaks in the skin and avoid bruising as much as possible. Remove to the storage house as quickly as possible after picking. Then, regardless of whether cold or common storage is being used, the temperature should be reduced to from 30° to 32° F. as quickly as possible. Ventilate the storage rooms where possible, to keep the air fresh and sweet. Finally, if in common storage, see that the air is kept sufficiently moist to prevent wilting, but avoid the use of sufficient moisture to produce mold growth. A relative humidity of 85 to 90 per cent will prove best for cellars. Such treatment will insure a high quality stored fruit, which will last to the end of the cold storage or common storage season for the variety.

The Pineapple Pear

THE trees of the pineapple pear are now forty-three years old, growing on the place of R. D. Rimes of Ludowici, Georgia. Mr. Rimes says there is no doubt but what this is a wonderful pear, that it is growing alongside the LaConte, Kieffer and other varieties which all show more or less blight, whereas the pineapple has not shown a speck of blight. This pear is indeed very promising and plant breeders all over the country will be interested in studying its characteristics.

Jugo-Slavia Prune Crop

ACCORDING to figures gathered by the U. S. Government, the 1922 plum crop of Jugo-slavia is now forecasted at 850,000 metric tons. These figures were gathered by Consul Patton of Belgrade. It is figured that about 340,000 metric tons will be dried which will probably yield 95,000 metric tons of prunes. Servia lost about 5% of its standing plum and prune trees during the war and the number of trees in that territory now is 87,000,000. Orchards in the new provinces were not greatly harmed by the war and in Jugo-slavia alone there are today 60,000,000 prune trees.

Pipe System of Spraying

FOR some years back, pear growers in the Delta district, south of Sacramento, have been using an underground pipe system for spraying, the mixture being put in large tanks in some central building where high-powered pumps produce a high pressure, forcing the spray underground to pipes in various parts of the orchard. Recently, apple growers in the Wenatchee district have begun to try this system and a number of them are buying pipe and putting in an underground system for distribution

Fruit Growing in New Zealand

(Continued from page 10)

As the bulk of the commercial orchards are still very young, and a large area has still to come into bearing, a large and progressive increase in the crop, year by year, is expected. An export trade is therefore imperative, and a start has been made in this direction. A beginning was made in 1914, by the export of 67,964 cases of apples, but the War stopped the trade in 1917. In 1920 it was resumed with 34,583 cases, in 1921, 52,024 cases were exported, and this year about 130,000 cases have been sent to England. It is hoped to be able to send apples and pears to the United States, as they will arrive in your off season, and the voyage to California, occupies less than three weeks, and steamers from New Zealand are now regularly trading through the Panama Canal. An experimental shipment of apples, sent this year to Honolulu was very well received.

Look to America

As New Zealand growers look to American experience, and to American publications, such as the AMERICAN FRUIT GROWER MAGAZINE, for guidance in this new industry, it cannot be said that there is very much in New Zealand methods of fruit culture from which American orchardists can learn anything which they do not already know. The method of clean cultivation is almost universally adopted in New Zealand apple orchards, with very successful results. The New Zealanders go in for closer pruning, as a rule, than American growers, and aim at keeping their trees within easy reach for picking. The high winds which are experienced at certain seasons have influenced this policy, and also have made the use of shelter belts very general in the Auckland Province. In the Auckland district cover-crops are sown, to be ploughed into the ground in spring, lotus angustissimus (also known as lotus hispidus) being generally used for this purpose. Being a legume, it introduces nitrogen into the soil, and it has the advantage of renewing itself, so that it does not require to be sown every year, like other cover crops. In Nelson, most of the growers have contented themselves with cultivating their orchards, but after seven or eight years are beginning to find that manure in some shape is necessary, and this year many of them are sowing blue lupins as a cover crop.

Advertising Tax

That New Zealand orchardists are in earnest is shown by the fact that they practically insisted on the New Zealand Government passing an Act of Parliament levying a tax of 1s (25 cents) per acre on all commercial orchards. The tax is collected by the Government, and handed over, less a small commission, to the New Zealand Fruit Growers' Federation, by whom it is expended in promoting the export trade, advertising, with a view to stimulating the local consumption of fruit, etc. The Federation also buys supplies for its members at wholesale prices.

The Government Department of Agriculture assists orchardists by supplying information on fruitgrowing, generally, and as to the most up-to-date methods for the control of diseases and insect pests. Practical demonstrations of pruning, spraying, and the grading and packing of fruit are given regularly by the orchard instructors attached to the Department. The Director of Horticulture visited the United States and Canada for the purpose of learning the latest methods of fruit culture and marketing adopted in those countries, and there is a small, but highly skilled scientific staff, consisting of entomologist, biologist, etc., attached to the Department. With a view to fostering the export of apples the Government guarantees to growers a net return of one penny (two cents) per pound at the orchard. The shipments are carefully inspected by Government graders to see that they are up to quality.

(Continued on page 26)

Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

Controlling Peach Bores

My six year peach trees have a gum about the base of the tree. What is the cause of this gum and what would you advise? —B. K. T., Tennessee.

THE gum is doubtless caused by borers. Formerly the recommendation was to cut them out but now the United States Department of Agriculture and the Experiment Stations have worked out a better method. Use paradichloro-benzine which is a white crystal. Use one ounce on trees 5 years or older. Smoothe the soil around the base of the tree—scrape off the gum and then spread the fine crystals in a ring around the tree and 2 inches from the tree trunk. cover with several shovels full of loose dirt and mound up in shape of cone about the trunk. It takes about three weeks for the crystals to vaporize and kill the borers. If the weather is cool, it will take four to five weeks. After the necessary time (depending on temperature) has been allowed, level down the mound of earth. In Tennessee and other states of the same climatic conditions, for forepart of October is the best time to do this work. Further north it should be done in September.

Prevent Rabbit Injury

Last fall and winter I had a number of my apple trees girdled by rabbits. How can I prevent a recurrence of this trouble?—C. T. B., Illinois.

THERE are several things that can be done with good results. Encourage the shooting of the rabbits. Don't leave brush piles or other cover for rabbits near orchard. There are several materials rubbed on the tree trunks that are or more or less protection but the best protection is the cylinder made of heavy galvanized hardware cloth. These will last for many years and they allow the sun and air to get to the tree trunk. There are other ways of protecting against rabbits, such as wrapping the trunk with newspaper, cornstalks, etc.—however, these last only one season and must be removed in the spring, otherwise the bark would become too tender.

Fall vs. Spring Planting

I expect to plant a small home orchard. Would you advise ordering the trees now and planting this fall or waiting until spring? —C. B. S., Missouri.

I ADVISE fall planting in sections as far north as the northern Missouri state line and even a little further north for apple and pear. In the far north, spring planting is best. Wherever fall planting can be followed, it has many advantages, the trees get established in the ground and will start growth very early in the spring. If the next summer is dry, the fall planted tree has a big start—often putting it nearly a year's growth ahead of the spring set tree.

No matter which season you plant, order your trees from some reliable nursery and order early so you will get your order in before the varieties you want are sold out. Trees can't be manufactured in a few weeks like other merchandise, so the safe way is to order early.

Cross-Pollination of Plums

I have a block of 100 Shiro plums 4-years old, that blossom freely, set some fruits and then it all falls off. County fruit inspector says they need a pollinizer. What variety can I use? Prefer a colored plum if possible on account of picking. Intended to bud a couple of limbs in each tree, as there is no room for interplanting.—R. V. P., Oregon.

CROSS-POLLINATION is always advisable, particularly with some fruits. To be safe, always plant several varieties to be sure you have sufficient cross-pollination. The America plum, which is red overspreading a beautiful yellow ground color, is one of the best, if not the best for all purpose plum grown. It is hardy, a sure cropper, extra heavy bearer and sells well. In orchards throughout the country, I have noticed that America is always making a splendid record. America is very resistant to rot even on unsprayed trees.

McIntosh Good

Do you advise McIntosh for this state? It scabs badly with me, yet it sells high on the market.—C. T. B., Vermont.

YOU are correct regarding McIntosh scabbing badly for it is very susceptible. However, this season has been the most favorable for the development of apple scab. In an average season, you would not have nearly as much trouble. Proper spraying (particularly the spraying when the blossoms first show pink) will control the scab.

For your state, as well as New York and all New England, I would certainly advise McIntosh as one of the leading varieties. It bears young, heavily and sells high. When it is mature, it must be picked promptly as it does not hang well. This past summer, I took an extended trip through New England and it served to increase my regard for McIntosh. However, other varieties should be planted with it to relieve the picking problem and to give later keepers than McIntosh. In New England I talked with many of the growers who have fruited the Delicious and are well pleased with it as a variety to plant with McIntosh. The New England growers report the Delicious as an early and regular bearer. Mr. A. A. Marshall of Fitchburg, Mass., has 600 bearing Delicious and he considers that variety as one of his best late keepers.

Management of Mulch

I have an orchard of 40 acres (mostly apples, some few peaches) in sod. Trees are planted 20 feet apart on the filler system with permanent trees 40 feet apart. Orchard is 10 years old. Have been mowing it and leaving the grass lie as it fell. With the trees as they are at present, this is quite a difficult job. I am writing to ask if it would be detrimental to the trees to pasture this orchard with calves. One of the most dangerous things to contend with in the way we have been handling it is fire.—F. S., Ohio.

ONE of the best ways to use the grass after it has been mowed in the orchard is to place it around the trees and in this way, it will serve as a mulch to prevent any evaporation of the moisture. In case you place this straw or grass around the trees, be sure and pull it way this fall (1½ to 2 feet from the trunk) in order to save your trees from injury caused by mice.

There is more or less danger in a mulch orchard from fire. However, if the mulch is piled under the branches of the trees—away from trunk—there is less danger, particularly if there is no loose cut grass in between the rows. Mulch piled thick under the branches is usually too damp to burn quickly. Cultivated strips at intervals help to minimize fire danger.

I would not advise you to pasture the calves in your orchard for they will injure the young trees. Pigs are the only kind of live stock that should be put in an orchard and even then, don't put too many in a limited area.

The Grape Industry of Western N. Y.

(Continued from page 3)

eration. It might happen that the consignee would report a car of grapes as arriving in bad condition if his markets were low, while under more active demand this same car might look entirely different to him and his report would be favorable. Government inspection will avoid all this difficulty.

Transportation Facilities

The climate and soil are only two of the factors that have aided in the development of the grape industry in this narrow belt of land in northern Chatutauqua County. This area is wonderfully well equipped with transportation facilities for handling the enormous grape crop. The New York Central and the Nickel Plate parallel the Lake Erie shore, the Pennsylvania and the Dunkirk, Allegheny Valley and Pittsburg lead off through the hills to the south and a branch of the Erie connects with the main line at Salamanca. These five railroads can distribute a large number of carloads of grapes within the relatively short time required.

Decline in Yields

The question is often asked by growers. "Have grape yields declined?" A careful study of the yields for five year periods and the conditions that affect yields lead to some interesting conclusions. In the first place the area that is best adapted to grapes is a comparatively small one and as a result in recent years much land that is ill adapted to vineyards has been set. This is only one factor however. Another very important factor that has affected yields in those vineyards where the very best cultural practices are not followed is the work of insects.

Doubtless the worst of these has been the grape root worm. The work of this insect is mostly below ground as might be inferred from the name and only very careful growers recognize the trouble until the yields begin to seriously decline.

For the last three years another insect pest has come to the attention of the vineyardists and is causing them a good deal of concern, this is the grape leaf hopper. Here again we have a pest that by some of the less careful growers might not be considered serious for its work will not seriously affect the yield the first year or two. Great damage is done however, not only in total yield but in the quality of the fruit. This insect sucks the juice out of the leaves and in this way not only injures the vigor of the vine but also impairs the leaves in their function of manufacturing sugar to be stored in the fruit.

The problem of controlling the root worm is a comparatively simple one. The adult beetles feed on the leaves for a time in the summer and a little poison on the leaf has proved effective. Control of the leaf hopper is more difficult since poisons are of no avail with sucking insects. Very thorough spraying with tobacco contact insecticides however will get most of these hoppers if the spraying is done at just the right time. Few farmers are spraying however and as a result serious declines in yield may be expected, except among the best growers.

Co-operative Marketing

The history of the development of the co-operative marketing of grapes is an interesting one and is a good story in itself. It is sufficient here to say that there have been periods when a large proportion of the grapes have been sold through the various associations and these periods have been followed by times when a comparatively small percentage were sold co-operatively.

Co-operatively most of the grapes have been sold on consignment. The consignment method has its advantages but depends too much on the integrity of the consignee. Already one phase of this has been mentioned under the discussion of the need of better inspection. Most of the grapes will still be sold by this method but the shippers who avail themselves of thorough inspection service and who use the greatest care in selecting commission men will find the method satisfactory, others will find it cumbersome.

A new development in the co-operative marketing game is being tried out this year. Three of the locals will market their grapes through a national fruit distributing agency. Whether such an organization with a sales force in most of the large cities of the United States can find the best markets remains to be seen.

Poor Market Reports

Unreliable market information has been a great bugaboo in this section. It is very common to have a report through the belt that grapes are selling in other sections for about half the price growers are being paid here. The cash buyers can use such reports to advantage whether they are authentic or not and in most cases there are no facts to support such reports.

This leads to another great need, that of a national market reporting service. The first step taken by the committee of the Farm Bureau Federation known as the Grape Marketing Committee was to establish such a service. It will be available this year and will meet one of the important needs and may add materially to the solution of the marketing of grapes. Its value will depend largely on the use that co-operatives and other marketing organizations make of it.

In conclusion a tribute should be paid to the valuable help that the Geneva Experiment Station has given to the grape growers in this belt. For fifteen years a sub-station known as the Vineyard Labratory has been located at Fredonia. Here cultural, nutrition and insect and disease problems have been investigated. Mr. F. E. Gladwin and Mr. F. Z. Hartzell have devoted almost their entire time to this work and have made valuable contributions not only to the grape growing industry of Chautauqua County but to the industry of the State and Nation as well.

Establishing Young Trees

A WELL-DEVELOPED root system of a young tree is essential for its proper growth. This will depend largely upon healthy foliage. For this reason it is often desirable to allow more shoots and branches on the young tree than make for its best appearance. After the tree is well established and a good root system is developed the superfluous branches can be removed.

Occasionally the wind will whip a young tree about so much that the roots are broken and a hole or opening is produced at the surface of the ground. Such a condition is detrimental to the tree and will allow water to collect in the winter, and through freezing and thawing the tree is injured if not killed. It would be well before winter to go about the newly set orchard and firm the trees by filling in any openings about their roots. If necessary the tree should be tied to a stake until the roots have become a firm anchorage for the tree.

It is also time that the peach trees are mounded somewhat for the winter and the loose earth can be removed when the P. D. B. gas treatment (para-di-chloro-benzene) is applied late in September. Mounding the trees often prevents severe injury to the crowns of peach trees.—J. H. Gourley.

Ohio Horticultural Society Meeting

ABOUT 500 attended the summer meeting of the Ohio State Horticultural Society at the Tom Corwin Farms in Jackson County on August 16th. These, like most Ohio orchards, are managed by the sod mulch method.

The principal talk was given by F. H. Ballou who pointed out most strongly the great danger of attempting to care for large acreages with insufficient equipment, and who said he thought the most successful grower in the future would be the man who had no more trees than he could care for thoroughly.

MARKETS AND MARKETING

THE past few weeks has seen a strengthening in the apple market in that there are more inquiries from buyers and that there has been less inclination on the part of the growers to want to sell their entire tonnage. Last July most of the apple growers of the east would have sold all of their apples if they had an offer. Now, a few are beginning to feel that the market has gone to pieces more than is warranted; that there was a large supply of early varieties like Duchess but that by the holiday season a large part of this tonnage will be cleaned up and people will wake up to find that after all the long keepers have rather a light crop as compared to summer and fall apples. Indications are that many of the New York apple growers are already arranging to put their better keepers into storage and control the fruit themselves until later in the season. Fall apples in New York have been doing fairly well, under the circumstances, both green and red fancy apples bringing from $3.00 to $4.00 a barrel. A few very fine Grimes from Ohio are reported to have sold as high as $5.75. Missouri Jonathans are being sold in bulk to a certain extent, prices ranging from $2.25 to $2.50 a barrel, such fruit to be delivered to the packing shed. This would mean approximately $3.25 loaded aboard cars. Conditions have improved in the west in the past few weeks and the first week of September reports coming from Wenatchee, would indicate that possibly as many as 800 cars have been sold with an increasing demand on the part of the buyers.

American apples in England the first ten days of September did fairly well when we stop to consider that the English apples are on the market at this time and also owing to low exchange there will be quite an offering of continental stock. Most of the English apples and continent apples will not be long keepers or storage stock but until that tonnage is cleaned up American shippers cannot expect the best returns. Wealthys are reported to range from $6.60 to $9.24; Wolf River from $6.60 to $9.46 and Gravensteins from $7.25 to $10.35. These are figured on the barrel basis. There is some indication that the crop offered to the trade will not be as heavy as quoted. Several sections of the Pacific coast report a heavier loss from codling moth than is customary and in some sections of the east fungus diseases will cut down the amount of fruit to be offered to the trade. On the whole, however, indications are that apples will be well matured, of good color and fair size, and should be of good quality.

THE entire dried fruit trade always waits for the prices which the California Prune & Apricot Growers Association generally names in early August. A delay was made this year in naming the prices until well into September, and these prices ranged somewhat lower than many expected but the association has named prices in accordance with what they believed would move the crop and get it into consumption. This is a point which must always be taken into consideration. The prices named by the association are as follows:

20-30	23¼c.	per pound
30-40	10¾c.	bulk basis
40-50	8½c.	bulk basis
50-60	7½c.	bulk basis
60-70	7 c.	bulk basis
70-80	6½c.	bulk basis
80-90	6¼c.	bulk basis
90-100	6¼c.	bulk basis
100-120	4½c.	per pound
120-up	4 c.	per pound

These prices refer to the Sunsweet brand, the advertised brand. The second brand known as the Growers brand, is quoted ¼ of a center under this schedule. The above prices are figured on a bulk basis and do not include any addition of packing charge.

The general manager, Mr. Coykendall, in referring to the prices, states that the association this year faces a unique situation, as for many weeks the market has been dull owing to general conditions in the country; the domestic situation, results of strikes, industrial tie-ups have all had an influence. He goes on to state that he believes the settlement of strike conditions and renewed industrial activities, will result in a trading that will warrant a material advance in his schedule. "At the present time, whereas our sales firm at opening are confirmed at prices named above, we are now quoting the trade at a quarter of a cent advance."

THE state Extension Service of Ohio has demonstrated pretty thoroughly this year that good grading of apples pays. Returns for the first twelve cars shipped showed that 40 per cent of the apples that had been graded "A" sold very profitably, that the 40 per cent that had been graded "B" made a little profit and the 20 per cent which fell into "C" grade sold for barely enough to cover freight and commission charges. The agricultural agents of Ohio feel there could be no better demonstration that quality counts.

Boston As a Market

BOSTON is one of the best markets for fruit and produce in the United States. While the city proper is only listed as having some 750,000 inhabitants, there are over a million and a half people within 15 miles of the center of the city and over 4,000,000 people within 50 miles. Boston is a very large shipping center. Buyers often go to Boston once a week from such places as New London, Hartford, Springfield, Worcester and Portland. Much buying is done also by telephone and telegraph from these cities. A large percentage of the fruit and produce sold in Providence, R. I., is bought in Boston. The distance between the cities is only 40 miles and auto trucks make trips every night between the two centers. Boston also does considerable business with Nova Scotia and New Brunswick and is an export city for apples, ranking high among the list of those in the country. The amount of fruit and produce which a city like Boston handles, according to the latest figures of the U. S. Department of Agriculture, amounts to 45,056 cars a year. Some of the principal items are as follows:

	Cars
Apples	2727
Apricots	8
Bananas	6880
Beans	409
Blackberries	11
Blueberries	137
Cantaloupes	1401
Cherries	108
Cranberries	91
Dandelions	79
Escarole	161
Gooseberries	3
Grapes	3284
Grapefruit	1219
Lemons	680
Oranges	4055
Peaches	799
Pears	505
Pineapples	75
Pomegranates	[illegible]
Raspberries	[illegible]

Rhubarb	104
Strawberries	794
Watermelons	704

It is interesting to note that Boston eats more bananas than any other kind of fruit, that oranges come second and grapes third and apples fourth. One would hardly believe that any city in America would eat more pomegranates than apricots and yet this city is credited with 20 cars of pomegranates to only eight of apricots. Boston is also the center of a big blueberry growing district and it is a large consumer of blueberries as it is shown they handle 137 cars of blueberries a year while only 11 cars of blackberries are used. Boston is likewise a relatively large consumer of pears, such varieties as Bartlett, Howell and Clairgeau being very popular. It is interesting to note where a city like Boston gets its produce and the following table prepared by the government gives some of the largest producers which ship to Boston.

State	No. Cars
California	8410
Florida	3382
Maine	7030
Maryland	990
Massachusetts	1110
Homegrowns	5325
New Jersey	792
New York	1311
Virginia	2367
Washington	827

Of the foreign countries which send fruit and produce to Boston, Costa Rica leads with 3628 cars—Jamaica 1368 cars—Honduras 1100 cars—these places all being large producers of bananas. Canada is a large exporter of certain types of vegetables and apples, New Brunswick shipping in 831 cars, Nova Scotia 442 cars and Ontario 106 cars.

October is the month in which Boston receives its largest shipments. They are totaling in excess of 5000 cars for that month as compared with only 3300 in November and 4800 cars in September.

Montana this year shipped the last cherries into the Chicago market, these arriving about August 25th, and being of the English Morello variety, coming from Hamilton, Montana. These cherries averaged on the Chicago auction $3.40 for twenty-four pint boxes.

Markets and Marketing

THE last of August and the first ten days in September saw the big eastern markets glutted with soft fruits. New York received 160 cars of fruit in a single day, of which 70 were Bartlett pears. Such offers are more than the market can handle and always result in low prices. The heavy offering forced the price down as low as $2.00 on pears, while for a number of days $2.00 to $2.50 delivered, were the average prices. Some fine western Gravensteins were sold as low as $1.34, the sales ranging from that to about $1.75. Everything else sold in about the same proportions. At the time of this writing, the middle of September, the market has strengthened very materially. Offerings were somewhat less on soft fruits. Western Bartlett pears were selling from $3.00 to $3.10 a box, delivered. New York bushel pears were reported as selling from $1.35 to $1.50 F. O. B. Some boxed peaches were bringing $1.25, while western prunes in suit cases were bringing $1.00 on the market. There is no question but what one of the biggest problems facing the growers is better distribution. The Oregon Growers Co-operative Association three years ago were on the right track when they put their pears into a great many carload markets rather than congesting a few large markets. Dwight L. Woodruff, general manager of the Wenatchee District Co-operative Association, has started out in fine shape this year. By early September he had sold 337 cars of apples to go to 28 different states. There is no question but what buyers are showing a little more interest in offerings than they were thirty days ago and that there is a strengthening feeling all around. A big improvement, however, cannot be expected until the heavy fall fruits move and growers should realize that low grade and small fruit will probably not pay the charges and that it had better be used in by-products or sold locally. Fruit that is large, well-colored and graded will probably bring profitable returns.

American Pomological Society

The American Pomological Society will hold its Thirty-ninth Convention at Council Bluffs, Iowa, November 15th to 17th at the time of the Mid-West Horticultural Exposition in that city. The Iowa Horticultural Society and the Nebraska Horticultural Society will also hold meetings at that time. The executive committeee of the American Pomological Society has prepared an unusually strong program. It is the aim of the society to be national in its scope and to deal with those subjects which are of interest to fruit growers in all states of the Union. This aim of the association has been ably carried out in the preparation of the program, which will be as follows: Addresses by: Dr. L. H. Bailey, President of the Association; Hon. Henry C. Wallace, Secretary of Agriculture; J. R. Howard, President of the American Farm Bureau Federation; Paul C. Stark, of Missouri.

The American Fruit & Vegetable Shippers' Association is doing a great work in this country and Mr. E. S. Briggs, Secretary, has been invited to be present and explain to the growers many things which will interest them along the lines of fruit and vegetable shipping.

There is much interest in this country in the question of fruit stocks and the U. S. Department of Agriculture co-operating in the various states is conducting some very interesting experiments. L. V. Scott of the Department of Agriculture, Washington, D. C., will be present and tell about this work. Dr. E. J. Kraus of Wisconsin, who is well known to horticulturists all over the United States, is to be present and will give an address on "The Fundamentals of Pruning." Prof. R. H. Roberts, also of Wisconsin, has been doing some very constructive work along the lines of pruning and the correlation of orchard practices to tree growth and development, and will talk on that subject. H. P. Stuckey of Georgia, who has been making a study of blight resistance in pears over a series of years, is to be present and will take as his topic "Blight Resistance in Pears." There has been an increasing interest in this country in plant breeding, and Prof. S. A. Beach of Ames, Iowa, who has been bringing out some very promising apple seedlings, will give the address on "Apple Breeding for the Mississippi Valley" and a discussion will be carried on by Dr. C. S. Crandall of Illinois. The Sour Cherry Industry of Wisconsin, Michigan, New York and California is on the increase and M. B. Goff from the famous Sturgeon Bay district in Wisconsin, is to be present and take as his topic "The Sour Cherry Industry." There is much interest at the present time in the middle west, in plums and apple growing. Dr. U. P. Hedrick, who has been testing out some three hundred varieties of plums is to be present and will take as his topic "The Plum Industry," while Mr. B. W. Douglas of Indiana, will discuss varieties of the middle west. Prof. N. E. Hansen of South Dakota will discuss varieties for the northern prairie region, and A. H. Hendrickson of California, will discuss varieties for the Pacific Coast.

The use of spreaders is coming more and more to the front every day and Dr. W. A. Ruth of the University of Illinois, has been studying these very carefully and is to give a paper on the use of spreaders. Prof. W. S. Brock of the University of Illinois, will treat on a subject which will interest all growers, viz: "Dusting and Spraying as Complementary Practices." Prof. Leroy Childs, Superintendent of the Hood River Experiment

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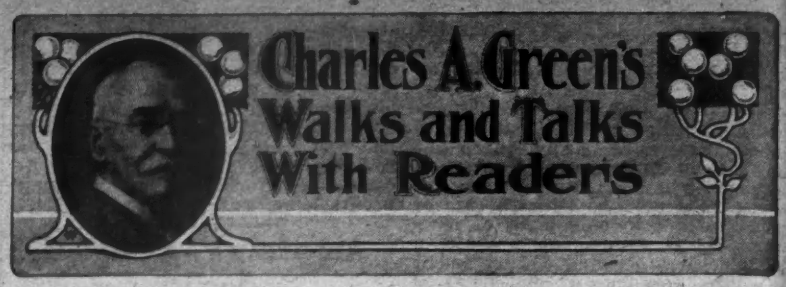

Buying Fruit Trees on the Installment Plan

I AM interested in the fruit growing business and am trying to get a start. My father has grown peaches on the farm for 25 years and has always had success with them. Last year my brother and I went together and planted some strawberries, raspberries, gooseberries, grapes and currants. They are all doing well except the strawberries. They did not all grow as the weather was too wet when some of them were planted. Our farm is in one of the best locations for fruit growing in this part of the country, so I think we will make out all right. I am thinking of buying on the installment plan.—Subscriber, Altoona, Pa.

C. A. GREEN'S reply: I have never favored the buying of anything on the installment plan and have never myself bought anything on this plan. My opinion is that the installment plan is liable to lead you or any individual into difficulties. My advice is that you save your money and defer planting until you have some capital to work with. One trouble with many farmers and fruit growers is that they are short of capital and cannot avail themselves of the opportunities that are presented. Fruit growing like every other kind of business is subject to reverses and to misfortunes, to bad seasons and to frosts, and other depredating sources. If one has capital, and he need not have very much to start fruit growing or farming, he can tide over bad seasons, but if he has bought plants on the installment plan he would be very much inconvenienced by what might happen.

The man who buys strawberry plants and sets them out on his place and makes all live would a marvel. Such success seldom occurs. Usually the planter of strawberries expects some of his plants to perish from one cause or another and these vacancies can be filled later on as the plants that live make growth and make new plants.

I judge from your letter that you have not had much personal experience in fruit growing. If so, you have much to learn and I advise you to commence in a small way. Pennsylvania is a good state for fruit growing. You are fortunate in having the land to plant on. I advise you to plant lightly and propagate your own plants, which is easily done in the case of strawberries and raspberries.

Orchard Inquiry

A PENNSYLANIA reader asks if he can dig up sprouts around sour cherry trees, that is of the Early Richmond type, plant them and expect an orchard. Also whether orchards should be cultivated for the first three years after planting. He asks if we advise the fall planting of strawberries and everbearing strawberries.

C. A. GREEN'S reply. My answer is no, you could not succeed for the reason that the sprouts will not produce improved varieties. I would assume that the sprouts would produce nothing but wild fruit. By digging up the plants you would disturb and injure the parent trees that are now thriving.

I will say yes in regard to your inquiry about cultivating orchards the first three years after planting. Many orchardists keep the soil well cultivated the first few years, growing hoed crops between the rows of trees. Certainly the trees recently planted need cultivated soil more than those trees that have long been established.

I do not favor fall planting of strawberries except in a small way, for the reason that the plants are liable to be heaved out by frost during winter. Even though they are covered with strawy litter they are liable to heave and perish. There are some who claim that strawberries can be planted at any time of the year when you can secure the plants.

I am not an enthusiast over fall-bearing strawberries or fall-bearing raspberries. I do not think they are valuable as a market variety. Many growers pick off the blossoms that appear in the ordinary season, which is apt to cause the plants to blossom later and bear fruit in October or November.

About Blackberries

I PLANTED five thousand blackberries and raspberries this spring. Both have showed a great tendency to bear. I have been picking off the blooms and berries so far thinking it would help the plants next year. Am I handling them correctly or should I let them bear? Will the plants set out this spring which are bearing, bear next year? I notice two of more suckers are coming up from each plant. What height would you recommend topping them for Kansas conditions? Does irrigation pay the first season for this locality? That is for plants set out this last spring?

C. A. GREEN'S reply: The little fruit produced on plants set out last spring will do the plants no injury. Thus, I would not advise you to pick them off.

Plants set out this spring should bear some fruit next spring but not very much. I recommend topping, that is, nipping the ends of the shoots when raspberry and blackberry plants are two feet high. I would not irrigate this year, possibly never.

Step Ladder Dangers

RECENT statistics indicate that the step ladder is the source of more accidents than any other implement. Almost every home has a step ladder. There are various devices. Some are self-supporting, others are rested against the building or tree. It is difficult to state which is the most dangerous of these two styles of step ladders. The step ladder which has two legs resting upon the earth, terminating at the top with one support, seems to me to be the safest ladder for orchard use, picking apples, etc., but even this ladder is liable to slide off from the high branches and result in accidents. I consider it safer to pick from the inside of the tree without a ladder, but even then it is necessary to use a ladder to gather from the outlying branches of fruit trees.

Soil Cultivation Something New

SOIL cultivation may be considered something new. In this country the Indian tribes had learned to grow corn when Columbus made his discovery of the continent. How long they had cultivated this one crop no one knows.

The early races of this continent, and of the entire world for that matter, lived thousands upon thousands of years, scientists say millions of years, before they discovered that the soil itself was a means of supplying their needs. Previously man had relied upon the fish from the rivers, brooks, lakes and the ocean and upon wild animals from the smallest specimen up to the elephant and the mammoth as well as upon the small birds and squirrels. That they should find sustenance springing up from the soil in the way of plants, herbs, nuts and various kinds of fruits was not a long time ago a new idea. This is not strange. Indeed when you come to think of it, how remarkable it is that such valuable products should spring up from the soil.

Belt Conveyor in Fruit Packing Plant

(Continued from page 10)

shorter than the preceding one, and each conveyor ends at a point where its load is discharged upon a wide packing belt that runs at right angles to the conveyor. Those 10 conveyors are moved at a speed of 70 ft. per minute on dead rolls and smooth pine slats. They are all driven by a 10-hp. motor, which is belted to reduction gears, the latter being connected to the shaft of the conveyor drums by which the conveyor belts are operated.

Now, the extra fancy apples, for example, are discharged from the sorting belts upon a conveyor and carried by the latter to the point where they are deflected to one of the 24-in. packing belts. As the apples are passed along on the latter at a speed of 15 ft. per minute, they are taken up by 8 to 10 packers and placed in boxes. If the apples are not all taken up as the packing belt moves along, those left over are returned to the head end of the belt by a conveyor that travels in the opposite direction. The filled boxes are passed along on a gravity conveyor to the nailing machine by which the box covers are placed and nailed down. By a similar process the other 8 packing belts are operated, each receiving apples from one of the main conveyors.

Boxed apples are passed from the nailing machines to semi-circular chutes through which they are carried down to the shipping floor where the boxes are stamped with the association's label. The capacity of the plant for putting through these processes of sorting, conveying and packing is 400 boxes per hour.

Empty boxes for return to the growers are carried over a 4-ply 12-in. conveyor, 350 ft. long, delivering the boxes to a slide from which they may be stacked and hauled away. The apple culls of all growers are carried from the sorting belts by a 280-ft. conveyor and are disposed of by either sacking or boxing.

The shipping and storage floor is served by a composition belt conveyor, 10 ins. wide and 340 ft. long, running through the center of the room. This is utilized for shifting boxed apples to points in the large wareroom from which they are transferred by gravity conveyors either to the shipping platform or to storage. The two basement rooms are in like manner equipped with belt conveyors. In the entire plant there is in use about 15,000 ft. of belt conveyors. In fact this system of fruit handling is carried out to the limit of its utility, which of course involves a considerable amount of transmission belting, and a good number of electric motors.

In connection with a visit the writer made to this plant and procuring data used herein, the courtesies extended by Edw. Peirce, president and general manager, and by H. E. Nelson, secretary and treasurer, of the Spokane Valley Growers' Union, are hereby acknowledged.

Not An Eating Apple

BILL SYMES drew a large, pink apple from the side pocket of his coat and prepared to attack it, when another of his workmates reached over and took the apple, saying:

"What kind of apple is that, Bill—Cox's Orange Pippin?" Then, as he munched, he said: "No, it hain't!"

Another loafer reached for the apple, saying:

"Cox's Orange Pippin, my 'appy haunt! Don't yer know a Beauty of Kent when yer sees it? Lemme taste it. No, 'tinsn't that!"

Still another grimy paw reached out and took the fruit, deploring:

"You fellows act as if you'd never seen apples before! That hain't no Beauty of Kent, it's a Dutch Mignon. No, 'tain't!" as he took the last bite of it. "What was that happle, Bill?"

"I thought," replied Bill sadly, "that happle was my lunch!"—London Answers.

WITH THE CO-OPS.

A CONFERENCE of representatives from the grape growing sections of eastern United States was held recently at Buffalo. A general committee of men from co-operative fruit organizations which have been in existence for more than a year, has been active in organizing the grape growers and in taking steps which will standardize the grape industry. The members of this committee are: R. J. Montgomery of Canada; J. Corwell of Ithaca, secretary; H. S. Fuller of Penn Yan; W. I. Velie of Marlborough, N. Y.; B. O. Schlender of Sheridan; Fred Johnson of Westfield; Mr. Kupp of Benton Harbor, Mich.; Mr. Thornton of Lawton, Mich.; and Mr. C. S. Aldrich of Fredonia, chairman. In addition; representatives from the Western Reserve Farmers Co-operative Association and Mr. Frank Crawford of North East, Pa., representing the Keystone Co-operative Association, were added.

A meeting is going to be called in Buffalo in early November at which time it is the purpose to organize a Concord Grape Association, the nature and form of which has not been announced at this time.

Those attending the conference were very optimistic concerning the marketing outlook and the conclusion reached was that opening prices would equal those of last year, viz: $85.00 to $100.00 a ton.

CRANBERRY growers of Western Oregon and Washington, which have been operating co-operatively under the name of the Pacific Cranberry Exchange, have just completed incorporation as a co-operative agricultural association. J. S. Dellinger of Astoria, is President, and W. E. Schimpff of Astoria, is Sales Manager. Last year the total crop of cranberries grown on the Pacific coast was 33,000 boxes. The crop this year is less than that of a year ago owing to a spotted condition, and some growers have a light tonnage this year.

CAPE COD Cranberry Growers' Association recently held its Thirty-fifth Annual meeting at the State Experiment Station, according to figures secured by Field Agent Fessenden, Department of Agriculture. The Cape's crop this year is to be about 260,000 barrels. This is larger than the yield for the past several seasons. The crop of Wisconsin is now estimated at 45,000 barrels, the largest in the history of the state, while New Jersey will have a yield of not less than 200,000 barrels. James J. Hennessey of Wareham is President, and L. C. Hall of Wareham is Secretary of the Cape Cod Association. These cranberry growers are all affiliated with the American Cranberry Growers' Exchange of New York, N. Y.

THE Winterport Fruit Growers' Association of Winterport, Maine, is doing a very fine business. This organization built a fine storehouse last year on the Bangor and Aroostook Railroad near Winterport. This plant measures 36 by 100 ft. and is equipped for both the storing and packing of apples. Fruit growers in that district are taking a much keener interest in their orcharding and more attention is being given to cultivation, pruning, fertilizing, spraying and dusting than in the past.

THE Traffic Department of the California Fruit Growers' Exchange have announced that they have been able to obtain a reduction in the freight rate on orchard heaters, effective from July 31st to December 31st. This will mean a saving of a large amount of money to the growers of California oranges.

The exchange also announces that between January 1st and August 1st they sold nearly 5,000 fruit juice extractors so that pure orange juice can be sold cheaply to consumers all over the country. The oranges are cut and manufactured into juice before the customers' eyes so that they can see they are getting a pure drink. There are 60,000 soda fountains in the United States and it is expected before long that every one of them will be equipped with orange juice extractors. Heretofore very little juice was sold from the soda fountains because of the mussiness and hard work in preparing the beverage.

THE Apple Growers' Association of Hood River announce they are going to build a new addition to their cold storage and refrigeration plant. The old plant erected thirty years ago is being raised and in its place will rise a three story concrete storage house. This will form an annex of the present 800 ft. long cold storage plant owned by the association at Hood River. The new plant will be 40 ft. wide and will cost approximately $25,000. The Hood River Apple Growers' Association has probably the finest set of cold storage plants of any apple organization in the United States. The total value of their plant at the present time is $300,000.

THE California Walnut Growers' Association recently completed their pool for 1921 by the payment of the last half million dollars to their members. The walnut crop of California last year was worth about $8,000,000. The quality was not quite up to normal and this, coupled with unsettled business conditions and heavy imports, meant that the crop was not as profitable as in some years. The association is to be congratulated, however, on their showing in management as the walnut grower received 96c out of every dollar taken in by the sales department.

THE California Fruit Growers' Exchange estimates that the citrus crop of California this year will amount to about 51,340 cars. This covers the entire twelve months from November 1, 1922, to October 31, 1923. It is estimated that oranges and grape fruit will approximate 40,233 cars as compared with 53,601 shipped in 1920-21. The shipment of lemons is estimated at 11,107 cars as compared with 12,275 cars in 1920-21. Figures are taken from 1920-21 rather than last year, owing to the severe frost which occurred last season.

THE East Greenacres Fruit Growers' Association has recently been formed in the Spokane district to handle the fruit of the East Greenacres district. Already some fifty growers have joined the association and a packing plant is to be leased in the district to handle this year's crop.

GRAPE growers of the east are better organized than perhaps any other group of growers and are beginning to advertise quite extensively. The Michigan Co-operative Grape Growers are planning this year an extensive advertising campaign for their grapes in the territory where they distribute the bulk of their tonnage. Their brand will be known as the "Michico." The members of the association are very enthusiastic about this campaign which will begin about the first of September and extend through a period of six weeks.

In connection with the advertising the associations are taking steps to carefully standarize their product.

Two labels will be used—one "Michico Table Grapes," which will be a large label for the two and four-quart baskets, while "Michico Vineyard Run Grapes" will be a smaller sticker used on the twelve-quart baskets.

LOGANBERRY growers in western Oregon and Washington are much concerned over the outlook of their industry. A year ago most of the growers got about 2½ cents a pound for their fruit, while this year the berries range from 3 to 4 cents per pound. The growers feel they should have at least 6 cents a pound to make a profit on this berry. The following table was prepared by Loganberry growers in western Oregon, as typical of the cost of producing:

Cultivation through season	$ 15.00
Tying and training vines to trellis	12.00
Hoeing around hills	12.00
Cutting off and burning vines	10.00
Fertilizing	25.00
Staking back vines	10.00
Depreciation and replanting	16.00
Picking and hauling at 2½ cents per pound	135.00
Cost of labor and picking	235.00
Receipts per acre at 4 cents per pound	240.00
Net profit per acre	5.00

This table, however, does not take into consideration interest, taxes, supervision, checking, insurance of pickers or interest on depreciation of machinery.

There are two things which the Loganberry growers west of the Cascades should keep in mind: First, that they are better off with a smaller acreage getting a heavier production per acre. The average yield is too low—around a ton and a half to two tons per acre—and it ought to be nearer three and four tons. The use of nitrogenous fertilizers like nitrate of soda and sulphate of ammonia, the growing of cover crops, cutting up the straw piles with a straw cutter and putting on a light mulch in the fall of the year which could be plowed under in the spring, would help build up the soil. More intensive tillage, and irrigation occasionally will all contribute to a greater yield, which will mean that the growers can sell their berries at a relatively low price and make money. The second step is proper organization. Ever since 1908 the loganberry growers have been talking about organizing and it is now becoming a standing joke in Oregon. Every fall and winter great mass meetings are held and the growers begin by telling what they are going to get another year and what they are going to do. Gradually the meetings peter out and the growers are generally left in a helpless condition. The logical thing for the growers to do is to join the Oregon Growers' Co-operative Association which has demonstrated that it can handle this kind of a situation but because the Oregon Growers' Co-operative Association have only 25 per cent of the tonnage to handle and have been unable to stabilize the market, they are often unjustly criticised. Few organizations in the United States have done the constructive work that the Oregon Growers' Co-operative Association has done under trying conditions in a period of business readjustment. Loganberry growers should forget some personal animosity against some manager or officer of the association or some director. No organization, however formed, is so perfect as to satisfy all, 100 per cent. The Oregon Growers' Co-operative Association has demonstrated that they can get along with the big canners and packers and they have handled their crop better than the crop has been handled by the outside growers. They are on the right track in that they are establishing some of their own factories to take care of the overflow. They would allow the formation of a Loganberry committee to advise with the management and work out the best methods of handling. If the Loganberry growers won't do this, those outside the association will have to form an association of their own. In forming this association they should keep outside interests away from their meetings. Every year some of these interests are there personally to prevent the formation of a Loganberry association. Sufficient capital should be raised to establish some plants or some physical means for handling the fruit. It would seem that the most sensible thing to do would be to put this acreage in the Oregon Growers' Association and use whatever money can be raised to provide better plants than the Oregon growers have at this time.

THE Oregon Growers Co-operative Association is on the job all the time. They have been continually watching the growers' interests and it looked a year ago as though the fruit of the Northwest would rot because the canneries would not run. The Oregon Growers' Co-operative Association jumped right in and worked out a plan whereby the canneries could run and the fruit industry was saved. During 1920, with the collapse of marketing conditions, this organization sold 12,000,000 pounds of prunes. As a result, there was no carry-over and the market for 1921 was left in a better condition than would otherwise be true. In 1921, with light prune crops in some parts of the state, the association made arrangements for canning a considerable portion of the tonnage. This year, with the biggest prune crop in sight in the history of the United States, the association has not been asleep. It has not only put its own plants in condition to evaporate the prunes, but has rented and acquired other plants and will try and meet the emergency. Unorganized growers are helpless under such conditions as have arisen in the last three years.

American Pomological Society

(*Continued from page 21*)

Station, Oregon, is looked upon as one of the best authorities on spraying in the United States and has been much sought on programs all over the country and is to be present and take as his topic "The Drift and Development of Spraying Practices in America."

There is a huge apple crop in the country this year and growers want to know how to handle this crop to advantage. "The Home Storage of Fruits" will be discussed by E. C. Cotton of Ohio, while J. R. Magness, who now has charge of the pre-cooling and cold storage investigations of deciduous fruits, for the U. S. Department of Agriculture, will take as his topic "The Proper Handling of Fruit in Storage." It is customary for the association to always conduct a survey of fruit conditions in the country. The Pacific Northwest will be handled by M. L. Dean of Wenatchee—the middle west by Prof. Laurenz Greene of Indiana—the Annapolis Valley of Canada by W. S. Blair, Nova Scotia. Prof. J. C. Blair, Chief of the Department of Horticulture, University of Illinois, has a very interesting topic entitled "A Horticultural Trip Through the Land of Evangeline." C. I. Lewis, Managing Editor of the AMERICAN FRUIT GROWER MAGAZINE will discuss "Advertising as a Factor in the Development of American Horticulture." H. P. Gould who is recognized as an authority on the peach industry of the country and is the author of a book on the peach, is to be present and will take as his topic "The Peach Industry of the Country." Two of our well-known horticulturists, Dr. U. P. Hedrick of New York, and Dr. W. L. Howard of California, have recently been to Europe making a study of conditions over there and will give addresses on European Pomology.

Other papers will be given on "The Export Situation" and many subjects of national and international interest, and reports will be given by Committees of Nomenclature, Wilder Medals, Fruit Shows, Slogan, New Fruits, Foreign Fruits, etc.

Such a strong program, combined with the very attractive Mid-West Horticultural Exposition, should guarantee a large attendance of the leading horticulturists, especially from the middle west.

Fruit Growing in New Zealand

(Continued from page 17)

Apart from the scientific assistance being given by the Department of Agriculture, most valuable research work is being carried on for the benefit of orchardists by the Cawthron Institute, Nelson. A wealthy merchant of the town, Mr. Thomas Cawthron, left about £240,000 (nearly a million dollars), for the promotion of scientific research, and the Cawthron Institute has been founded with the money. It devotes itself especially to research connected with agriculture and fruitgrowing. The Director is Professor Easterfield, a distinguished New Zealand chemist, and the staff comprises Dr. R. J. Tillyard, an etomologist of world-wide reputation, Mr. T. Rigg, M. A., M. Sc., agricultural chemist, Dr. Kathleen Curtis, M.A., D.Sc., mycologist, and plant pathologist, etc. A soil survey is being made of the Nelson Province. And experiments are being conducted with different manures, and different varieties of plants for cover-crops so that advice on these subjects may be given to growers. The biologist is at present engaged in finding a remedy for woolly aphis, which is beginning to give trouble in New Zealand, and which, it may interest your readers to know, is called here "the American blight." For this purpose two natural enemies of the aphis—the aphelinus mali, and a ladybird, Hippodamia convergens,—have been imported from California. Another parasite has been imported to cope with the grass grub, which is very destructive to lawns and pastures. Fireblight made its appearance for the first time in the Northern part of New Zealand about three years ago, and is also the subject of close attention both by the Department of Agriculture and the Cawthron Institute. In the chief orchard district in the Auckland district it has been made illegal to grow hawthorn, as this plant harbours fireblight and enables it to hold over during the winter. New Zealand, in the early days of the fruit industry had very few pests, but gradually these are being introduced with the importation of plants and trees from overseas. It is a great pity that a strict system of plant quarantine was not enforced from the first, and there is a growing feeling that the precautions at present taken by the Government to prevent the introduction of pests ought to be made much more stringent.

Canning Sweet Cider

(Continued from page 7)

use as far as human consumption is concerned. Only sound cull apples are used. After sweating the fruit in piles for several days it is carefully sorted, washed and crushed or grated. The true apple flavor cannot be obtained in cider without a preliminary sweating of the apples. The most delicately flavored champagnes of France are made from apples which have been stacked and allowed to sweat to develop the apple aroma and flavor. This same method should be practiced if a highly flavored sweet cider is desired.

As the fruit is crushed it is built up in the form of cheeses on the press platform. These cheeses are merely sacked pulp. A square press cloth of strong material about two and one-half times as long and wide as the square press form is spread over the form and filled with three to five inches of pulp, the sides and ends are then folded over; the form is removed and a rack is placed upon the completed cheese. From six to eight of such cheeses will fill an ordinary press. The press will extract six gallons to one barrel of juice from the stack of cheeses depending upon the type and size of press. Fall and winter varieties of apples yield from three to four and one-half gallons of juice per bushel.

Straining and Settling Juice

As the juice comes from the press it should be strained through fine screen or burlap to eliminate all coarse material then it can be pumped directly into settling vats. These vats should be kept in cold storage if possible unless the cider is made in the late fall when the weather is cold. If the juice is not kept cold it will soon develop alcohol in excess to the amount limited by regulations governing alcoholic liquids (Volstead Act). The juice after settling can be handled in several ways for canning purposes. The length of time for settling will be governed by the further treatment of the juice.

Clarification

The best flavored although not the clearest cider can be made by centrifuging the juice then canning. This is the easiest and quickest method of handling. The cider need not remain in the settling vates longer than over night in this case. This settling is done merely to remove the coarser material in order to prevent clogging the centrifuge. The best centrifuge to use for this purpose is the tubular type which does not need cleaning so frequently.

Another good method for clarifying is the use of silica sand. This material when fine enough can be used for filtering. A barrel with a filter can be constructed by reconstructing a 50-gallon barrel with a false bottom about three-fourths of the way down. The false bottom should be covered with one or two layers of burlap or press cloth material. Upon this the sand (previously washed) can be placed so that it fills the barrel to within three inches of the top. The cider to be filtered is allowed to come in through the bottom of the barrel, pass up through the sand and into the canning equipment.

Preheating the Juice

The quickest and easiest method of handling is to run the juice directly through a preheater which uses water as a conductive medium for sterilizing the juice. This can easily be constructed by using half-inch copper pipe in long lengths and coiling it in a tank filled with water heated by steam. The juice flows through the copper pipe by gravity and is heated to the proper temperature by the water surrounding the pipe. This method of preheating is better than steam heating because it prevents the juice from coming in contact with temperatures higher than 160 degrees Fahrenheit. A cooked flavor is easily imparted to sweet cider upon heating so great care must be used throughout the process of preheating and later processing.

Canning Juice

This preheated juice is filled directly into sterilized plain tins to within one-quarter of an inch of the top of the tin. The tins are exhausted in an exhaust box at a temperature not exceeding 160 degrees Fahrenheit in order to drive off any surplus air contained in the juice. Here again the water exhaust rather than the steam would be of distinct advantage for the sake of the flavor. The exhausting should not be less than 5 minutes for No. 2½ tins and from 6 to 8 minutes for No. 10 tins

Processing Cider

After exhausting, the cans should be sealed then sterilized as soon as possible in an open bath cooker at 160 degrees Fahrenheit, No. 2½ tins 20 minutes, No. 10 tins 30 minutes. The can should then be cooled to about 90 degrees before they are stored in the warehouse.

It cannot be too strongly emphasized that proper temperature control is necessary for the proper handling of this product. Good thermometers and good controls on all preheaters, sterilizers and processing tanks should be used as temperatures in excess of 160 degrees Fahrenheit is injurious to the flavor.

The above methods for the handling of cider through the clarifier does not prevent the cider from becoming turbid upon sterilizing in the final process. The coloidal and albuminous material still in the juice coagulates upon heating and causes the juice to become cloudy. The use of filtermasse, however, removes this precipitated matter, thus leaving a sparkling clear juice. This juice does not have the flavor of the original cider, however. The filtermasse removing as it does so much of the material which goes to make up the real cider eliminates the real flavor of the apple. The juice remaining is apple juice with very little apple except the sugar, acids and water.

The filtermasse method is used quite extensively in the following manner: After extraction, the juice is sterilized and settled in cold storage, later run through filtermasse filters. These filters use especially prepared wood pulp formerly used in beer clarification. The resultant product is bottled with carbonic acid gas and sterilized. The carbonization of this juice gives it the zest which it lacks through the removal of the precipitated albumins.

With attractive labels and good advertising the canned sweet cider should find a ready sale. Soft drink establishments and even groceries should find a ready outlet for cider among their patrons. In the Pacific Northwest in one small community over 10[illegible] gallons a day were sold throughout the winter and spring without agents or advertising. If this can be done without advertising the possibilities are good for big sales when advertising is properly conducted.

Vinegar Making Under Farm Conditions

(Continued from page 7)

know the sugar contents of the juice we are in a position to calculate how many per cent of alcohol this juice will yield when fermented under half way careful precautions as will be told later. We have learned in the above example that the juice contains 11.7[illegible] per cent fermentable sugar. We now multiply 11.76 X .48 = 5.64 and this example tells us that this juice when fermented dry after six to ten weeks will show at least 5.64 per cent by volume of alcohol.

Testing Vinegar

Now we want to know how strong vinegar will yield from the fermented wine. We multiply 5.64 X 8 = [illegible] and learn by this that the wine will produce vinegar of 44 grain of acidity or scientifically expressed, 4.4 per cent of acetic acid. Hence we learn that the vinegar produced from the original juice will be marketable and in compliance with the law and therefore an unobjectionable product of commerce.

So as to determine whether the calculated results have actually been obtained after the sweet juice has gone through the alcoholic fermentation and subsequently through the acetification process, it is indispensable to make a simple acid test. This simple operation, which can be carried out by any inexperienced but careful operator, does not require scientific training, and for this a graduated vinegar hand-test tube, a standardized normal alkali solution and an indicator solution must be on hand. The operation is as follows:

Fill the graduated hand-test tube with the vinegar to be tested up to the mark 0—then add three drops of the indicator solution and shake. Then fill up slowly with the alkali solution and shake hand tube repeatedly by holding thumb on open end and turning it over. Care should be taken not to spill any of the liquid; keep on adding slowly the alkali solution drop by drop until the liquid in tube turns pink and stays pink for one minute. When this is the case the reading of the graduated glass tube up to which the liquid reached when turning pink indicates the percentage of acetic acid present in the vinegar. Having these principals absorbed we must consider that only by guiding at first the alcoholic fermentation and secondly also the acetic fermentation, we can depend at the calculated results.

Fundamentals of Success

As to this the strictest observation of the following main points will serve

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The Orchard Home

A Section for All Members of the Family

Edited By MARY LEE ADAMS

Don't Fail to Vote

EARLY in November, elections will be held in which every citizen should take an active part. Since 1920, all women in the United States are full citizens with the right and privilege of voting. A lot of time and effort were spent in obtaining that right. Perhaps you spent none and perhaps did not wish the ballot, but such differences of opinion count for nothing now. It is the plain duty of every woman, not only to vote herself in the November elections, but to urge this duty upon others.

A presidential election may be the most spectacular, but its result may well be less vital to your nation, to your state, to your community, than the coming November elections. You should take every opportunity to inform yourself as to the qualifications of the various candidates, and your vote should be cast for those who, you thoughtfully decide, will fill their office to the best good of the country.

It is a noteworthy fact that the farmer vote in many countries, is playing a part infinitely more important than at any previous time in history. If farmers, in the future, are to benefit by legislation, they must make their vote count. The farm woman represents half of this vote. She must not fail to contribute her share.

The costly, painful and often disastrous conflicts between labor and capital, too often have as sole result the widening of the breach between them. Capital is confirmed in its conservatism and becomes more reactionary and autocratic. Labor becomes more bitter and more socialistic, often verging upon bolshevism.

The farmer, representing as he does both labor and capital in his own person, naturally pursues the sane middle course which is for the good of all. Never before have farmers had such a wonderful opportunity of serving their country by making their influence strongly felt in national affairs. It is a call that every woman should hear and answer. Vote in the November elections.

The Long or Short of It

WE AMERICAN women are strong-minded—of course we are. But we have, and know we have, one weakness without which we'd scarcely be women at all—we do like to be dressed in the fashion. We prefer sensible fashions but if they are foolish we follow them.

For quite a while we've been peering anxiously into the future to learn whether Paris, that modern Moloch that swallows alive everything not strictly up-to-date, will permit us longer to revel in short skirts. Word went out that the decree was against them. Paris skirts were dropping down and down. London skirts were long, but that didn't prevent them from looking dowdy, and our women do not take their ideas in dress from London.

What a relief it is to read, in the newest notes from the French capital, that the autumn modes show "skirts of moderate length." This indicates that the full strength of the wave of long skirts, may have been spent before completely submerging our shores. Gone perhaps, is the airy knee of the flapper, but few tears will be shed for this if only we are not forced to let our skirts act as brooms.

At Last the Perfect Wife

FOR long it has been the pleasant diversion of man to comment upon the conversational speed and endurance of woman. Probably more women than men talk too much. Many men openly sigh for silent wives, but few there be who find them. And how would they like it if they did?

There's one man who should be able to answer this question. That man is the husband of the famous dancer Isadora Duncan. But he would answer in Russian and we wouldn't be much the wiser. Miss Duncan, we are told, speaks no Russian, and her recently wedded husband speaks nothing else. Presumably the reporter also does not speak Russian for he gives only Miss Duncan's view of the matter, which is that words are unnecessary where a complete voiceless understanding exists.

We have all observed soundless, but apparently perfectly satisfactory conversations being carried on between young persons of opposite sex. A wise old judge used to say that it was a pity young people could not just twitter together like birds, for that would be musical and, after all, when they did speak they said nothing.

The language of the eyes is eloquent yet, on the less dizzy heights of romance, the tongue supplements them conveniently. In the present stage of feminine evolution, men will have to go far to find a woman willing to risk matrimony without the possibility, on occasion, of telling John exactly what she thinks of him.

The Point of View

"THAT fool of a woman doesn't understand a word I say," was the impatient comment of an American girl abroad who had failed to make her wants known to the foreign maid whom she had addressed in English. "And do you understand a word she says?" asked her companion. But the girl still felt injured.

Intolerance is the fruit of temperament and environment, and does less to promote a good understanding between neighbors and nations than any other one thing save selfishness—either individual or national. We know that it depends upon which side we look whether we see the cloud or the silver lining. Yet it's hard to credit the sincerity of those who, when we wag our heads wisely and say the outlook is dark indeed, proclaim that prospects are bright.

Each person is in some sense the center of his own universe, and there's nothing easier nor, let us add, more provincial and narrow, than to assume there are no horizons beyond our own. We look as far as we can and see nothing more—therefore there is no more.

"Tolerate all save intolerance," is a motto that may be too literally interpreted, but which carries the germ of a desirable broad-mindedness. Right now, on the brink of elections, is a fine time to practice it. Divergent political views not infrequently mar friendship because of our insistence upon the idea that those who do not see as we do are blind or knaves.

What Next?

SOME of us are old enough to remember that parental heads were shaken over the idea that a decree of divorce might be awarded for such trival cause as "incompatibility of temper." Since that almost prehistoric day, human inventiveness has been put to the test to discover wnat may furnish escape from uncongenial association.

Yet even in the good old days when desertion was accounted as one of the two reasonable grounds for divorce, we cannot recall a single case of the so-called "golf widow" suing for relief. No Sir! she just bought a set of clubs and came along and spoiled his game.

But now, when we thought everything imaginable had been tried, comes something new. A woman sues for divorce and "Radio" is named as correspondent. On reflection it appears that she has a better case than some others. His affections have been alienated by this modern Circe, and upon the bright intruder into his home, he spends most of his money and all of his time.

We are not without sympathy for the poor, lonely woman, but Gadzooks! is a man to have no hobby save the wife of his bosom?

Revelry

By Lawrence H. Lee

The mornings tell the story well
Of Autumn's drunken revelry
O'er range and lawn, in early dawn,
He works his scottish deviltry.
On tree and vine he flings his wine
And paints the leaves bright gold and red.
Oh-ho! Oh-ho! the wind doth blow
To cool drunk Autumn's heavy head.

In fiendish glee from every tree
He shakes down brilliant showers,
Then looks awry with mocking eye
At Spring's once leafy bowers.
Astride the trees he grasps the trees
And crams his blouse with plunder
In one bright day of drunken play
He tears June's wreathes asunder.

I've just read of nine uses for lemons and can think of nine more right away. Can't you? Yes, just like that. Soon the term "He's a lemon," will have quite as favorable significance as "She's a peach."

A NEW Englander expressed his doubts as to the natural eloquence of the negro race. "Sir," answered the Mississippi colonel, "you have never heard a colored boot-black addressing a few moving remarks to a pair of dice."

Making Old Peach Trees Pay

(*Continued from page 8*)

ing season he gives his operators a light lunch of coffee or tea and sandwiches, and from then on until dark they work without tiring or complaint. Also the work is done more thoroughly and the laborers come up smiling the next morning.

Mr. Veeder states that some may think both his heavy spray and his luncheon scheme are wasteful, but by this method he has taken the word "cull" out of the vocabulary of his orchard terms. On his small place his bill for spray materials was about $1,200 this year, aside from the labor, but he believes it is worth it. Right now he has about 100 per cent of a full crop again and the fruit is in fine condition. Last year, 1921, he saved about 800 crates from being culls by carefully spraying and these 800 crates brought in about $1,500 which amount was enough to pay for the materials used on the entire place.

About $500 to $1,000 has been saved by putting in an up-to-date modern equipment for making the spray. The material is not touched by hand from the time the raw sulphur is dumped in until the spray comes from the nozzle. The spray costs about 6 cents per gallon to make, including all charges.

And this brings up the fact that Mr. Veeder keeps a careful cost record of all operations on his place. Last year his cost per crate was about $1.34. This included the following charges: 69 cents for harvesting, including crates, insurance, storage, hauling, gathering and every other item of expense per crate in harvesting the crop of 10,000 crates; 20 cents for fertilizer, 1 cent for water, 1 cent for cover crop, 7 cents for harrowing, 1 cent for hilling, 2 cents for repairs, 3 cents for plowing, 5 cents for pruning, 18 cents for spraying, 2 cents for terracing, 4 cents for worming with para-dichlorobenzene, and 1 cent for thinning. The cost of $1.34 per crate of course does not include the running expenses of the place, which must be taken care of by heavy production and a good price per crate. So far, however, the expenses of the Veeder orchard have been heavier than they should have been. An old worn out orchard has been taken in hand and made to yield a profit. Young trees have been set out, the place has been put in good shape, the land is again fertile, and full of humus, and erosion has been nearly stopped. From now on, a greater margin of profit is visible. About 6,000 more trees will come into bearing in 1923, and these have had the best of care from the day they were first set.

So the darkest days are about over and the future looks brighter. It took a struggle, though, and young Veeder won the respect and confidence of his fellow farmers in Georgia with the manner in which he tackled his job and not only won back the rugged health of his athletic days, but also won back an orchard and made it pay.

Lessons Learned

I asked him to tell me about some of the things that he has learned during the years of struggle. He replied: "First, I have learned a lot of things about which I knew nothing. I have learned that peach growing is not as simple as it seems. I have learned to look to the investigating horticulturists for advice and suggestions. I have found that the growing of peaches or fruit of any kind is a profession and that it is a year 'round business. My fight was made necessary by reason of absentee landlordism, and I have found that this does not pay. I have found that the close system of planting is a failure on rolling land such as prevail in the Cornelia district and that planting on a level is better. I have learned that it does not pay to prune too heavily for successful commercial production. Heretofore we have cleaned out the centers of our trees too freely. It is a fact that 40 per cent of the fruit on our place this year was produced on the short, center twigs. If you have

five crates on a tree and cut out four of them, how can you expect to utilize your plant to the maximum capacity?

"I have learned further that we have underestimated the bearing life of a peach tree when properly cared for. With the elimination of the borer and its trail of root rot, I would not want to put a limit to the age of a tree. We have some trees now going on 22 years old which are bearing successfully and our main bearing orchard is about 17 years old and last year averaged two crates to the tree, one year after dehorning.

"I have learned also that a tree intelligently fertilized will bear more fruit and better fruit, that the tree is more resistant to cold and will generally set a heavier crop. I have learned not to worry about dry weather so long as I have a tractor and harrow. This past season, we harrowed our orchard 15 times, getting over it every eight days on an average, for we had no rain for seven weeks at the most crucial time in the development of the fruit.

"I have learned the importance of a good spray hand and plenty of spraying material. There is no need for a cull peach. Two years ago we had one-half of one per cent culls and this past season we had only 40 bushels of culls in 10,000 crates, so it seems that we are marking the cull off of the list.

"I have learned that thinning pays though it may seem a waste of money at the time. This past year 98 per cent of our fruit was one size, the comercial 2-2 pack, and was beautiful in uniformity and color. And this brings up the question that honesty is the best policy. Veeder's peaches bring a premium price because we have established a high standard in our grading and packing. When we ship, we load away from the end of the car to allow of perfect air circulation. Our wisdom in this was proven when one of our cars was eleven days en route to Boston and arrived in good condition.

"Finally, I have learned how to stop erosion, how to terrace and how to live on the home farm. I know it pays to keep a simple cost account of all operations and to cover buildings and equipment with insurance."

And I know that this young peach grower has learned a lot in a short time. He is becoming sought after for advice about his work. Only recently the horticultural students at the University of Georgia made a pilgrimage to his orchard to study his methods. He was recently called upon to address the horticultural section of the Association of Southern Agricultural Workers and his ideas have weight and attention among peach growers wherever he goes. Woodrow Wilson signed young Veeder's diploma at Princeton, and when under the great stress of his duties as President during the recent war, Mr. Wilson personally wrote Mr. Veeder a letter expressing his appreciation for the crate of peaches which goes to him each year. It is my belief that the President wrote the latter personally because the peaches were so good he wanted another crate.

Vinegar Making Under Farm Conditions

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this purpose well and are considered important no matter whether a vinegar plant of the smallest or largest size is concerned:

1st—Cleanliness and rapidity of the pressing operations; the crushed fruit pulp should not be exposed to air and hence to contamination neither in receptacles nor on the press any longer than is absolutely necessary.

2nd—The press juice should be sifted and immediately filled into barrels which should, however, not be filled up to more than four-fifths. When tanks are used they should be provided with well fitting covers. Under farm conditions mostly barrels are used to ferment the cider or fruit juices in. The barrels used should first be thoroughly cleaned and scalded with boiling water and laid on skids about two feet above the floor in a fermenting room not exposed to freezing.

3rd—The first violent fermentation in the barrels will be over in the four-fifth filled barrels within ten to fourteen days. During this period the bung hole must be left open. Care should be taken in entering a room where a large number of barrels of juice is in fermentation if the room is not well ventilated. This is on account of the suffocating carbon dioxide gases formed during this period.

4th—After ten to fourteen days a fermenting bung should be put in every barrel bung hole. A fermenting bung is a simple home-made affair. Take a wooden conical plug fitting in size to the bung hole, drill a ½-inch hole lengthwise up to about ½ inch from the top, and drill 5 or 6 small holes of 1-16-inch diameter through the plug into the ½-inch channel. Place a snugly fitting soft rubber band of about ½-inch width over the outside of plug covering the small holes and drive the plug tightly into bung hole. The gases formed during after-fermentation will when the gas tension becomes too strong in barrel, lift the rubber band and escape, and in this manner prevent air coming in contact with the fermenting wine and thus prevent contamination.

5th—After six to ten weeks the alcoholic fermentation will be finished and the fermented hard cider or wine should be racked off into meanwhile prepared barrels, and separated from the dregs deposited in the barrel. The barrels may be loosely bunged so that eventual pressure caused by after-fermentation would lift the bung, but not burst the barrel. The dregs from the empty barrels should be filtered through a two-foot layer of fine sand and likewise filled in barrels. Another three weeks of storage and the hard cider or wine will have sufficiently cleared to be used as vinegar stock for conversion into vinegar.

6th—There are different methods applicable for turning the fermented vinegar stock into vinegar. In a general way the rule holds good that the slower the method of acetification is permitted to proceed, the finer a quality of vinegar as to bouquet and taste is obtainable. The slowest method is found in the old Orleans process. This is the method to be followed. Drill 2¾-inch air holes in each head of a 50-gallon barrel and fill about 30 gallons of the vinegar stock to which about one gallon of pure cider vinegar is added on top for seeding the vinegar bacteria. If it is possible to prewarm the stock in barrels to about 85° F. it is of advantage. The working room where these mother barrels are

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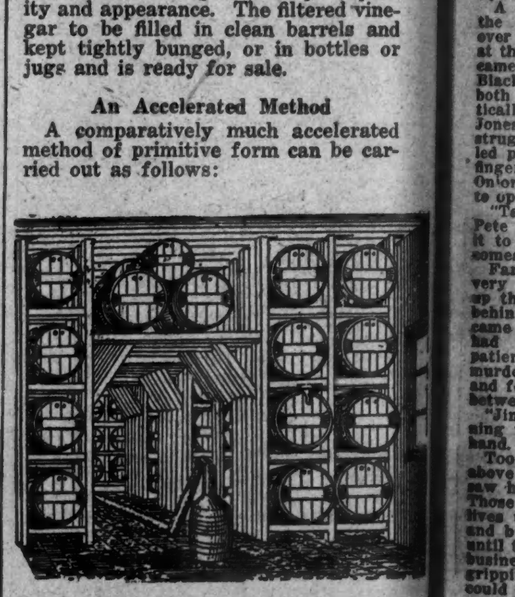
stored must be heated and kept at a temperature of about 85° F. Over the bung hole of barrel place a piece of slate or glass loosely. Within a week a noticeable odor of vinegar will develop and the slate plate show moist. At this stage the top of the liquid will show a thin veil-like cover, consisting of a cohesive skin of vinegar bacteria.

Testing Samples

Once every week samples are taken from every barrel and tested for acidity. In about three weeks the acidity of the vinegar will show perhaps 2 per cent or a little over, two weeks later 3 per cent, three to four weeks later very likely the acidity will have reached 4 per cent or even 4.4 per cent as originally calculated. The vinegar is drawn off then from every barrel through the spigot, only about 6 gallows vinegar left in, and the barrels are re-filled with fresh vinegar stock; seven to ten weeks later stock will again be found converted into vinegar. Good and uniform acetification under the Orleans method can only be obtained if the vinegar room is kept uniformly at a temperature of 85 to 90° F. The raw vinegar drawn off from the barrels should be filtered to brilliancy through a flannel filter bag by the addition of a small quantity of my special asbestos compound to the vinegar, which will remove all and any impurities from the vinegar. The quality of the vinegar produced in this slow Orleans method will rival any commercial cider vinegar in bouquet, quality and appearance. The filtered vinegar to be filled in clean barrels and kept tightly bunged, or in bottles or jugs and is ready for sale.

An Accelerated Method

A comparatively much accelerated method of primitive form can be carried out as follows:



Arrangement of vinegar room equipped with Orleans casks

Provide a barrel or a large cask or a battery of any number of them, stuff each container full with dry corn cobs, birch twigs or wine stalks, provided two bung holes in each barrel and also one 1-inch air hole exactly in center of both barrel heads. Lay the barrels or casks on skids two feet above floor and about four feet apart from each other. Fill each barrel a little less than half with well fermented vinegar stock so that the liquid level reaches about 1½ inches below the air hole in center of bottom. In each bung hole drive in tightly a spigot. The downward spigot keep closed, the one on top open. Three to four times every 24 hours roll each barrel over on the skids for a distance so that the faucet below comes to stay on top. The low faucet is kept closed, the upper faucet kept open. The air hole in center of bottom may always be kept open. This simple arrangement which I may call a primitive type of a revolving generator works very well and yields good aromatic vinegar. About once a month or every six weeks when the acidity of the vinegar has reached 4 per cent or higher, the vinegar may be drawn off and the barrel is recharged with new vinegar stock. The quality of the

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The Son of Wallingford

By GEORGE RANDOLPH CHESTER and LILLIAN E. CHESTER

Young Jimmy Wallingford with "Toad" Jessup narrowly escapes running over a flock of geese. Pretty Mary Curtis laughs at them, and from that moment Fawnlake City becomes to Jimmy the most desirable place in the world to locate. Dusk finds them still talking to Tal Curtis, Mary's hospitable father; but in leave-taking, as he is about to give his name, Jimmy poignantly recalls the scene in the Wallingford library that is the cause of his leaving home. J. Rufus had angrily exploded: "I am not satisfied with you, Jimmy." When he leaves home, Jimmy drops all but the first syllable of the family name. He with Toad Jessup goes to Fawnlake City, to be near Mary Curtis. Toad finds oil bearing rock on the Curtis farm. They start drilling for oil. At a thousand feet they sell their racing car to get money to continue drilling. At Fawnlake City, Jimmy and Toad find J. Rufus Wallingford, Blackie Daw, enjoying a Persian Carnival. Mrs. Wallingford and Violet Bonnie Daw have come back with the boys. Blackie Daw discovers Jimmy and Toad are the "Wall" brothers, so Wallingford refuses to go on with his fake land scheme. Jimmy gets jealous when he sees a stranger talking intimately with his Mary. Jimmy recognizes the stranger as "Doc" Blinkers, a medical student. J. Rufus Wallingford pays the Beegoodes $10,000 for the land he was to boom. The Beegoodes are disturbed by Wallingford's apparent satisfaction with the deal. Lottie and Dottie McCabe of "On With the Jazz Company" call on Bertram Begoode, M. D., Dottie says she has a sprained ankle. By their professional demands upon his attention, the young women of Wallingford's "On with the Jazz" company wreck Dr. Beegoode's village practice and enrage his sister Caroline. Meanwhile, Wallingford, Sr., and his friend, Blackie Daw, refuse information concerning a huge roofless, windowless structure and ten tanks that they construct on the land they bought from Henry Beegoode. Eighteen miles away, across the county line, they have a dozen tank cars of crude oil and a gas engine pump attached to the forgotten natural gas line that once ran into Fawnlake City. With a curious crowd outside their highboard structure, J. Rufus and Blackie await oil. Fawnlake City has an oil craze, as the developments progress. Jimmy has a fight with Dr. Beegoode over Mary. Then Mary tells Jimmy, "Dr. Beegoode is to be my husband." Dr. Bertram Peegoode tries to defraud Get-Rich-Quick Wallingford but the latter has surprising evidence. Wallington pumps oil into old gas pipe line believing it feeds Jim's well. Jimmy in white rage at his father's trickery demands of Fanny, his mother, to know why she let him grow up under his father's influence. "Because I loved you both." Jimmy is sorely tempted to sell his interest to his enemies for a quarter of a million but honesty prevails and he refuses to sign. Two workmen employed by Wallingford, hunting a paper they had stolen, which is really the third copy of the bill of sale chemically developed, set the Wallingford plant on fire when they get drunk on vodka. Jimmy hurries to the scene in a wooden rowboat. An explosion hurls burning oil into the lake, and Mary sets out alone in her motor boat to rescue Jimmy. To keep the men of Fawnlake City from opening the sluicegates and drawing the oil to the center of the lake, thereby dooming Mary and Jimmy, J. Rufus tells of the fake oil scheme, and reaches into his pocket for the paper to prove it. The paper is not there.

It wasn't in any of Wallingford's pockets! Why, he'd seen the thing that very morning; had it in his hands!

"Well, where is it?" suddenly shrilled Henry Beegoode, springing on the platform steps, black with craven passion to have these people murdered before they could find that paper. "He hasn't got it! And he never did have it! It's another fake! It's a desperate lie to save his hide at the expense of an honest man; one of your own townspeople that you've known for years! I say lynch 'em!" and immediately there rose again the shrill voice of Caroline Beegoode:

"Lynch 'em! Lynch 'em! Lynch 'em! Lynch 'em!"

A fight broke out in the edge of the crowd. Two men were rolling over and over in the grass back there at the slope of the hill, and from them came up a hoarse voice calling Jim, Blackie. Fannie and Violet Bonnie both recognized that voice, and frantically they ran back to find Onion Jones and Petrograd Pete in a deadly struggle for the possession of a crumpled paper. It was clutched in Onion's fingers, and Pete, with his teeth in Onion's wrist was trying desperately to open that hand.

"Take it, quick!" gasped Onion as Pete strove to smother his voice. "Give it to Jim, and tell him Onion always comes through!"

Fannie seized the paper, and in that very instant Jed Purvit made a dash up the steps, with other men pushing behind him, and Blachie's iron pipe came down on his skull! The crowd had reached the last limit of its patience and pushed forward with murder in their hearts, and the sheriff and four policemen were all that stood between.

"Jim! Jim! Jim!" Fannie came running with the bill of sale high in her hand.

Too late! They couldn't hear her above all the tumult. Her husband saw her wave the paper, but too late! Those men had led tranquil, honest lives until now, and had been cozened and bulldozed and cheated and lied to until they were sick of it! They meant business, and the time when those gripping hands would be on his flesh could be counted by minutes, almost by seconds! God, this couldn't be true! It wasn't right! It wasn't just! What terrible faces those men had. They weren't human, with their glaring eyeballs and their set jaws and those flecks of foam on their lips. Ugh! Just he and Blackie to battle for a few extra minutes of life, just he and Blackie, just he and Blackie!

Suddenly there was some one else beside him. Jimmy! Jimmy, with his face blackened by fire and his shirt front scorched and his hands blistered, but his jaws set with high courage as he ranged alongside his father; his father before all the world! And there was Toad alongside Blackie, good, sturdy, freckled Toad with fight in him from the roots of his hair to the tips of his square-toed shoes. Almost Jim Wallingford had been going under, but the sight of Jimmy, thre by his side, roused his pride and stiffened his knees. Just in time, for the sheriff gave way, and they were coming! Coming! And in all the earth and sky there wasn't a thing which could save them—these four against all that mob. Before the flames of the oil died down four ropes would be dangling from that heavy bar which held the sluicegate cables.

"Jimmy! Look! Jimmy, Jimmy, look!" cried Tal Curtis, down in the mob with Mary, and his voice was so electrical that even those grim men on the steps heard and turned and looked! There, up the ravine, the Big Hope oil well was spouting a mighty column, 300 feet high, a fountain of gleaming rubies in the glare of the fire from New Bagdad, and, as the crowd stilled, its attention distracted by this new wonder, the rush and the roar of that tremendous gushing pillar could be heard above every other sound.

Among all that crowd the first to recover his composure, the first to regain the use of his wits, was Get-Rich-Quick Wallingford! "Look at my son's Big Hope well!" he cried, and the blood was back in his face, the strength in his knees. "It's a gusher! Real oil! Millions of gallons of it!"

"I pumped it!" screeched the vindictive voice of Petrograd Pete, seizing his glorious opportunity.

"It's a lie!" cried Wallingford, but his voice had lot its magic with them. It was in their minds that that gusher was being pumped, and they drowned the voice of the faker with angry howls. Another voice broke in, a clear and a vibrant and a young voice: Jimmy Wallingford's!

"YOU'LL listen to me, men!" he told them, breasting those grim executioners who still hesitate at the top of the steps. "You'll listen to me if I die for it! And you'll believe what I tell you!" There was a ring in that voice which Get-Rich-Quick Wallingford had never tried, the ring of an honest man who knew that he was honest. J. Rufus drew a deep breath of relief, and it suddenly broke on his knowledge that the boy didn't need any help. By George, he had them! As the young old magnate's vibrating tones rang on, telling them all about it, men's faces softened and women stopped their hysteria. Oh, it was marvelous. It was magical, the way this mesmeric, big young fellow stayed and held these people, and the mountebank father of this wonderful son felt his heart beat high and his eyes grow moist. Jimmy's mother looked up at her son with wide eyes and tears on her cheek. Her son! Her son—and so like his father; so like; but honest!

Jimmy was making them see it—that the violet-tinted paper was right and true, that the Beegoodes were what they were, that his father was what he so jovially looked to be; and then, most marvelous of all, leading them to lift up their hearts again and hope, and weave once more dreams of wealth and happiness.

"Look at it!" he was telling them. "Look at it! Could any drunken fool say that he could pump that much oil out of the ground with a plain pump and make you believe it? Why, there's a million million tons of oil under this town, and we're all rich. And I'll tell you something else! This afternoon I did believe that well up there to be a fake, and because it wouldn't be honest to sell it, I refused a quarter of a million dollars for it!"

"You can prove it by me, Jimmy! You can prove it by me!" quavered the high-pitched voice of Grandma Curtis, and she wiped her eyes as she smiled up at him from where she leaned on the arm of President Burrowes of the G. & W. and A. I. & E. "Jimmy told it to me, and I voted with him because it wasn't honest to sell it—even to Henry Beegoode!"

It was good to hear that laugh from the crowd! Splendid! Heart-warming!

"And I'll tell you something else, Jimmy!" called up Burrowes. "I'm going to begin shoving that branch road through your oil land next week!"

The new railroad! That was the finishing touch. Now indeed was Fawnlake City agog and agape! The golden dreams they had been led to believe were realities right now! They'd all be rich! And, say, a fellow likes to be just, doesn't he? Well, they wouldn't have been rich if it hadn't been for Jimmy Wallingford; so blessed be the name of Wallingford, J. Rufus and all! Also Daw! Also everybody! Except the Beegoodes, on whom anathema! Where was Henry? Why, sneaking away across the park! Hey, there! Stop him! Stop thief! And every last soul in Fawnlake City who had bought an oil well from Henry had a sudden feeling that they couldn't trust him with their money overnight! So there he went, lickety-split, with a third of the town after him, and by his side a gaunt female figure.

Ah, this was a great night, a fine night, and the two-thirds of the town who stayed behind to watch the heroes gather up there on the platform, the Wallingfords, the Daws, the Curtises, the Jazz young ladies, and President Burrowes laughed themselves sick to see those Beegoodes go it, blast them! And while they were laughing at that Onion Jones touched a match to Petrograd Pete's oil-soaked whiskers, and that specialist in violence, with one wild shriek, plunged into the lake and was fished out with all his powers for evil gone, for his whiskers were missing! And while everybody was laughing at that, there began a new hilarity in the center of the crowd, and worked rapidly outward. The Jazz girls were with great gusto tossing out photographs of Dr. Bertram Beegoode in many interesting poses, and the work was being done under the direction of the divine Florodora. "Blinkers" Beegoode was speeding away as fast as the little tin coupe would carry him!

Why, the chorus was throwing rice up there on the platform, and Jimmy Wallingford was kissing little Mary Curtis, and she kissed him back in plain sight of all. Hooray! Three cheers for little Mary! And three cheers for Jimmy Wallingford, the boy orator, next mayor of Fawnlake City, next senator, next anything. Hooray, hooray! And Toad Jessup was kissing Cleo, and there was more throwing of rice which had been meant for Florodora and her swain. Three cheers for Eddie and his willowy bride, Horray, hooray! Music! Up in the band stand the band, "tipped off" by the triumphant sheriff, played, "Here Comes the Bride."

AS WITH one accord, Jimmy and Toad turned to each other and grinned; then, as with one accord, they gazed on that majestic spectacle at the head of the ravine, that ruby-tinted gusher of real oil which, gathering strength since the last tap had opened a way for it through Wallingford's rock pocket, had blown off its own cap, torn away the derrick and was relieving itself with volcanic violence. With tears in his eyes Jimmy turned to Toad and put his arm around his freckled partner, and said, "Well, Toad, what do you think of it now?"

Toad squared his lips, "What I aways thought! I always knew there was oil down there! Didn't I, Tal?"

"Certainly did, Toad, certainly did!" yelled Tal, a hand on the shoulder of his friend Wallingford and a hand on the shoulder of his friend Blackie. "And I'll have to say this about our son Jimmy, Mr. Wallingford; he's a smart boy, and I'll make his mother say so before the night's over!"

"I'll say it now, Tal" agreed ma, and she smiled most amiably on Mrs. Wallingford and Mrs. Daw; while happy grandma just kept saying: "My, my! My, my!"

"But, kids!" (J. Rufus Wallingford had this night retired permanently from all business, yet nevertheless his commercial instincts were still with him). "If you fellows can step down from glory for a little while, don't you think you'd better plug that well? You're losing a hundred dollars a minute! Hustle right up there, in Sweet Patootie. She's yours!"

"Thanks dad," drawled Jimmy, a twinkle in his eye and that quizzical smile on his lips as he drew Mary's arm through his and turned to the steps. "Father, what's your idea about a lobeless ear?"

The whole family for that answer, the Wallingfords, the Daws, the Curtises, the chorus, and "Daddy," this last person being none other than President Burrowes, who had been adopted on the spot by the Jazz young ladies, and liked it.

"Well, son," said J. Rufus, looking Jimmy eye to eye, with the same twinkle and the same smile, "I'll say that it means about the same as a cowlick, and a cowlick denotes an honest man or not, according to who wears it!" and Fannie Wallingford, her arm in her husband's, smiled in serene content. THE END.

Sweden and the Stockholm Archipelago

By Mary Lee Adams

GEE! I felt homesick this morning when I tried to buy the only copy of the Saturday Evening Post on display at the Stockholm bookstall, and found that its traveling expenses had brought the price up to 42 cents. How very far from home the Post and I must be.

But it's worth a twinge of homesickness to see new and lovely lands. We were warned that there would be "nothing worth seeing" between Christiana in Norway, and Stockholm on the east coast of Sweden. Which meant, I presume, no hair-raising precipices or thundering water falls. But after the magnificent and awesome landscape we had lived with for weeks, it was a delight to see nature in a milder mood. Woods and lakes, broad fertile farms, hills and fields gay with wild flowers of great beauty, made a charming picture all the way.

One Touch of Nature

Even without the scenery, traveling would be rewarded just for the pleasure of finding out how really friendly most people are. Everywhere they have been ready to put themselves out to help and guide us when they suspected that we might not be able, unaided, to handle the ropes in unknown lands.

If our coach companions know no English and can do no more to show good will than to smile, then they smile at us. Sometimes a sheaf of kodak pictures comes out, and by signs we are made acquainted with wife and child, house and dog and pony. Then a hearty handshake at parting, and earnest good wishes of which we may not catch the exact drift, but to which we respond with equal eloquence and obscurity.

Two customs appear identical at home and abroad. One is the excited waving of hands, by old and young, to the passing train. The other is the taking of the stranger into one's confidence by means of snap shot pictures. It's good to see that men of many nations are loath to part from home and family, that they carry the pictures of their loved ones with them, inviting the chance companion to share their pleasure in the dear familiar faces.

Mysteries of Menu Cards

Less English is spoken in Sweden than in Norway. We notice this cheifly at meal time when the need of language is imperative. I had no idea how many Norwegian words I had picked up until I was confronted with a Swedish menu card. A brave guess always brings some kind of food. It is probably what we have ordered, though not always what we think we have ordered. Stern fate, in the guise of the waiter, dispenses gifts often unexpected and occasionally unwelcome.

There's nothing I like better in Stockholm than the many open air restaurants, so pretty and inviting with their setting of trees and flowers, and with good music that accompanies practically all of them. There's a particularly fine marine band at an open air restaurant in Skansen Park that overlooks the city and fjord from a high wooded bluff. Here hundreds of people throng of an afternoon. Some merely to listen to the music and enjoy the sunset lights on the water. Some to order coffee and waffles from the many pretty waitresses in gay peasant costume, and some with the firm resolve wantonly to insult their stomachs with the favorite "Smorgasbord."

This consists of a tray bearing every hors d'oeuvre known and many hitherto unknown. Conspicuous among the dainties are anchovies, cheeses, various breads with sweet butter, radishes, smoked fish and meats, cold meats, tomato salad, and pickled cucumbers, pickled beets, pickled eggs, pickled fish, pickled meats, and pickles and pickles. The whole, washed down

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4105. A Stylish Coat for the Growing Girl.

Broad cloth, homespun, velours, and duvetyn, also silk and pile fabrics are suitable for this model. The sleeve, in raglan style, is very comfortable. The fronts may be buttoned close to the neck with collar rolled high, or, open with the collar rolled low.

The Pattern is cut in 4 sizes: 6, 8, 10, and 12 years. A 10-year size requires 3¾ yards of 44-inch material.

Pattern mailed to any address on receipt of 10c in silver or stamps.

4117. A Simple Frock for a Young Miss

Smart belt extensions on this dress, effected by slashes at the sides, are an outstanding style feature. The sleeve may be in wrist or elbow length.

The Pattern is cut in 4 sizes: 6, 8, 10 and 12 years. A 10-year size requires 3½ yards of 32-inch material. Serge, crepe knit and jersey weaves, also taffeta are attractive materials for this style.

Pattern mailed to any address on receipt of 10c in silver or stamps.

4122. A Chic One-Piece Style.

Fashion has put her smartest lines in this creation. The sleeve and collar are new and attractive. Serviceable pockets are concealed under the neat tabs. As here portrayed, checked eponge and linen are here combined. One could have this in gabardine with contrasting material for trimming.

The Pattern is cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. A 38-inch size requies 4⅝ yards of 44-inch material. To trim as illustrated requires ⅝ yard of 44-inch material. The width at the foot is 2¼ yards.

Pattern mailed to any address on receipt of 10c in silver or stamps.

4125. A Splendid Model in Wrap Style.

Stylish and very attractive in blue serge with black braid and buttons for trimming. Jersey and knitted fabrics are good also for this design.

The Pattern is cut in 3 sizes: 16, 18 and 20 years. An 18-year size requires 4 yards of 54-inch material. The width of the dress at the foot is 2⅝ yards.

Pattern mailed to any address on receipt of 10c in silver or stamps.

4128. A Comfortable Work or Porch Dress.

Here is a very pleasing house dress, that may also do duty as a "street dress" in coat style. The lines are simple. The sleeve may be in wrist length or finished with the cuff in elbow length.

The Pattern which is nice for gabardine, serge, gingham, percale, pints and crepe is cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size requires 5⅝ yards of 32-inch material. To trim as illustrated requires 1 yard. The width of the skirt at the foot is 2⅝ yards.

Pattern mailed to any address on receipt of 10c in silver or stamps.

4140. A New Play Dress.

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Sweden and the Stockholm Archipelago

(Continued from page 32)

by several long glasses of beer, would stage a restless night for an American. Perhaps the Scandinavians avoid this by never going to bed in summer. At least we never have succeeded in staying up until the crowd went home. It does seem a shame to leave the bright daylight at 11 p. m.

Venice of the North

Stockholm is a very beautiful city and well merits its title of the Venice of the North. It is built on a group of islands, and though there are no gondolas, the fleets of white ferry boats do the same duty. Hundreds of craft of all kinds crowd the waters of the many bays, inlets and fjords that intersect the city. Stockholm numbers half a million people and I believe 400,000 of them must own their own boats.

There are fishing boats with great round nets, like huge flat baskets hanging from the prow. These are let down into the water and drawn up by pulleys. There are legions of row boats and motor boats, and ever so many sail boats. An occasional liner dwarfs the little fellows, and sturdy freighters ply endlessly back and forth.

Nothing can be pleasanter on a summer morning, than to sit on the flowery verandah of the Grand Hotel looking across the sunny slip of blue fjord toward the great buildings of the Royal Palace, Riksdag and Opera House, and watch the ferries bringing their loads of busy passengers into the city. Sailor boys stroll up and down the water front, soldiers in blue uniform pass by and, most splendid of all, gold-laced and helmeted policemen who literally flash in the sun. I try to make my breakfast last as long as it will hold out, but the continental breakfast is slim, and if marmalade is added to your coffee and rolls, you fear you would be regarded as a pig to order more.

Next to Godliness

Besides the water sights there are many on land. An extraordinary number of fine buildings, handsome monuments and statues, parks and gardens. All so shiningly well-kept. It is the boast of Sweden that cleanliness is her second name. Even the fallen petals of flowers in the city gardens are swept up daily, often by young women who, moreover, scrub the benches with pails of soapy water.

If it be possible for a place to exceed the guide book descriptions of it, Stockholm is that place. Yet there is one detail that the estimable publication fails to mention. The sidewalks are paved with small, rough stone blocks. Oh! my suffering soles. How they did ache until they toughened to the job. One is supposed to keep to the right here as in England, but I notice that pedestrians whose feet are set on the smooth and narrow strip at the outer edge of the sidewalk, show a singular inability to distinguish left from right.

Pleasures and Palaces

Every democratic American citizen feels a healthy curiosity as to the inside of a palace. I visited the Royal Palace and, after being duly impressed by marble stairs, gilded halls, crystal chandeliers, truly exquisite tapestries, and portraits of royal children with wings sprouting from their angelic little shoulders, I came away glad that my lot was cast in cozier surroundings.

It would be easier to envy the country place of Drottningholm, a short boat ride from the city. Here the doors were closed, but the grounds, including an artistic formal garden and most delightful park, were open to the public, who showed their appreciation in large numbers. If any guards were present to see that the property was not injured, they were not in evidence, and all appeared to feel quite free to wander at will.

A Rosy Memory

And the return trip through the lovely Stockholm archipelago in the deep glow of sunset, is a memory that will linger. Richly wooded islands sloped down to the water, and big rocks rose from the brown carpet of pine and fir needles. Little bright green meadows broke the dark forests and the water was alive with pleasure boats. Sails glowed gold and pink in the light, and there were other things that glowed pink as well.

I had been told to look out for "pink seals," so I did, and saw herds of them. No strange arctic monsters of the deep as I had supposed, but parties of bathers unafraid of cold blue water or chill puritanic glance. The sight would have smitten the police of any American bathing beach, with an epidemic of apoplexy if not with total blindness.

Having preserved my eyesight by a strong effort of will, I shall now set out to see the sights of Finland. This is as near as we shall get to Red Russia. In the capital, Helsingfors, or as the Finns call it, Helsinki, may be seen bullet holes in the walls. These were made during battles between the Whites and the Reds early in 1918, and that's as close in time and place, as I wish to come to any fighting.

Vinegar Making Under Farm Conditions

(Continued from page 30)

vinegar thus attained comes very near that of the first described method and is in every respect aromatically the equal of any vinegar made by the quick generating method generally in use in commercial cider, malt or spirit vinegar plants, in which the manufacture of large quantities of vinegar is the object. With the introduction of the so-called quick process in the manufacture of fermented vinegar, by Schuetzenbach in 1823, this method has been adopted all over the world in commercial vinegar factories.

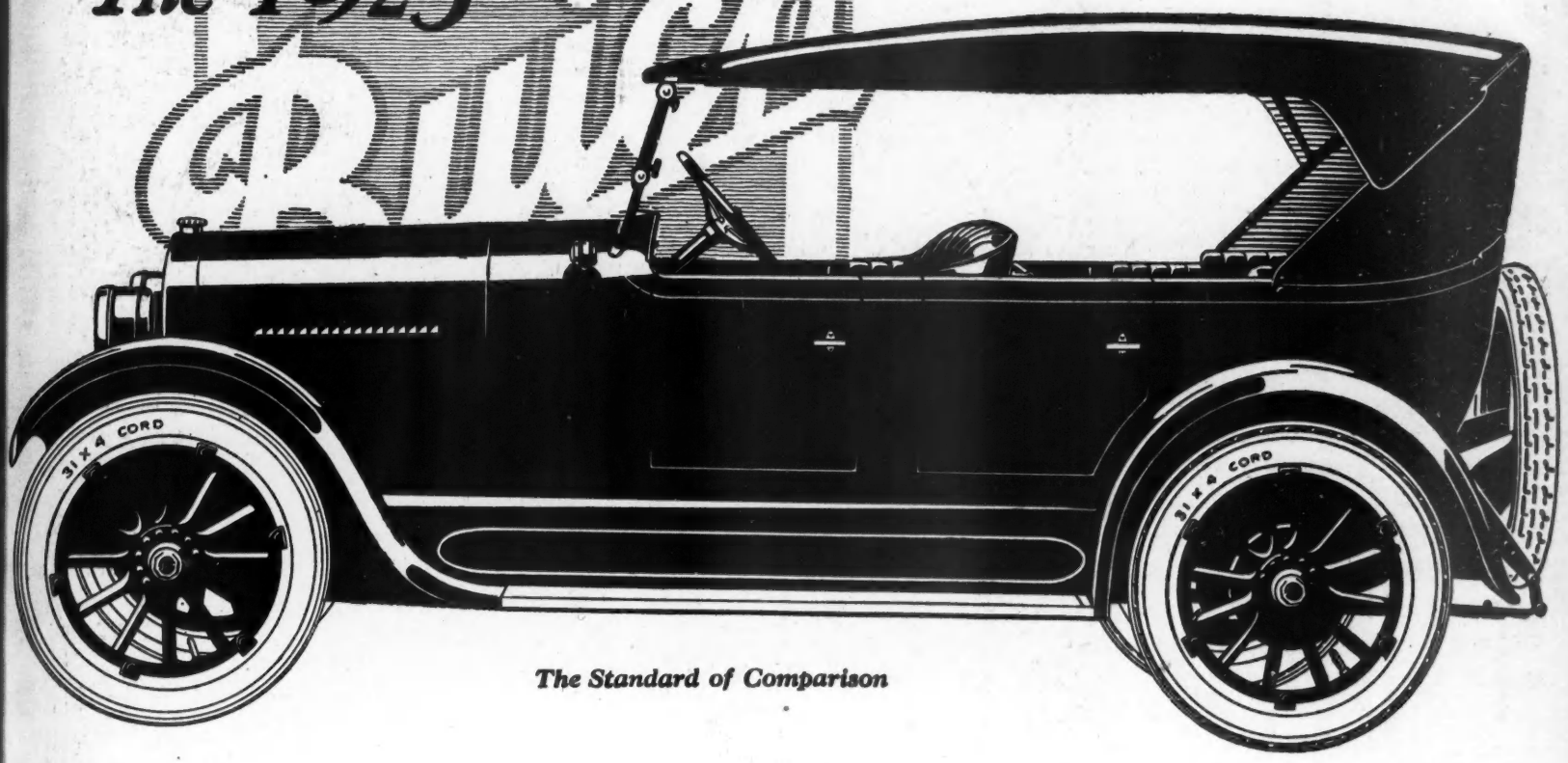
Standard Generator

What is termed in the United States a "Standard Generator" is an upright wooden tank of from 3 to 4 feet diameter and 8 to 10 feet high. This generator is filled with porous material (such as spiral beech shavings, rattan, corn cobs, straw, coke or charcoal) qualified to offer a soil upon which the vinegar bacteria can thrive and propagate in an alcoholic medium furnished to them in finely divided form and wherein provision is made to supply abundant quantities of oxygen necessary for the exertion of the physiological energy of the bacteria. The small standard vinegar generator is more and more giving way to giant generator types of 10 feet in diameter by 18 feet high and for the sake of completeness of the subject I shall only touch on cider vinegar making on a factory scale by referring to the practical lay-out of a cider vinegar plant consisting of two large vinegar generators of a size of 10 feet in diameter and 18 feet high, which together produce about 700 to 900 gallons of 40 to 50 grain cider vinegar every 24 hours. I have within the past twenty years of my engineering experience so simplified the manufacturing principles by automatically operating infusion devices, improved on generator packing and given such clear directions for the practical operation of vinegar factories through the medium of my various publications that the many difficulties vinegar manufacturers have been up against throughout the ages have now truly become, in the sense of the word, a thing of the past.

This brief sketch on "Vinegar-Making Under Farm Conditions" may in many instances fall upon fertile soil and induce fruit growers to investigate the possibilities of making practical use of the suggestion of adding industrial vinegar to their farm product.

VALVE-IN-HEAD

The 1923 Buick



The Standard of Comparison

A "Four" That Sets a New Standard

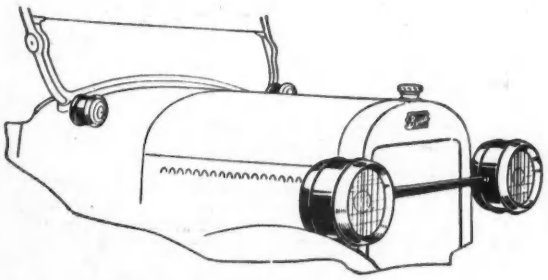
The 1923 Buick Four Touring—$885

In beauty of appearance, dependability and economy of operation the Buick four-cylinder, five-passenger Touring has established an entirely new standard for four-cylinder cars.

Its low body with its clean, straight lines, accentuated by the high radiator and straight hood, give it a long, racy appearance that is new to cars of its class. Massive crown fenders add to this distinction, as do the snug-fitting, shapely top and the handsome drum-type head and cowl lamps.

And with this beauty has come a new riding comfort. The seats are deep and low with full leg room in both compartments. The steering column has been changed in position to increase driving ease and the gear shift lever has been raised to meet the driver's hand. A transmission lock, a windshield adjustable from the inside, and a transmission-driven speedometer likewise are among the many new refinements of this model.

Material changes also have been made in motor, chassis and body construction which contribute still further to the wonderful performance record characteristic of Buick cars for twenty years.



Distinctive Head Lamps

Drum-type head light and parking lamps are among the new refinements of all 1923 Buick models, both fours and sixes.

The Buick Line for 1923 comprises fourteen models: Fours—2 Pass. Roadster, $865; 5 Pass. Touring, $885; 3 Pass. Coupe, $1175; 5 Pass. Sedan, $1395; 5 Pass. Touring Sedan, $1325. Sixes—2 Pass. Roadster, $1175; 5 Pass. Touring, $1195; 5 Pass. Touring Sedan, $1935; 5 Pass. Sedan, $1985; 4 Pass. Coupe, $1895; 7 Pass. Touring, $1435; 7 Pass. Sedan, $2195; Sport Roadster, $1625; Sport Touring, $1675. Prices f. o. b., Flint. Ask Ask about the G.M.A.C. Purchase Plan, which provides for Deferred Payments.

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No illustration, even in actual colors as shown here, can begin to do justice to the real beauty of this magnificent rug. You must see it, to fully appreciate it. Has a stunning two-tone blue floral medallion center and pink roses interspersed with green foliage and a touch of delft blue coloring to enhance its great beauty. Set off with artistic conventional border to match. Has closely woven worsted face—will withstand hard wear for years and years. This is a brand new pattern, designed exclusively for us, fresh from one of the largest rug manufacturers in America. Colors just as illustrated. **Full room size—9 ft. x 12 ft.**

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